WEST VIRGINIA UNIVERSITY

1965-66 Catalog

(Undergraduate)

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WEST VIRGINIA UNIVERSITY

The 1965-66 Undergraduate Catalog

WEST VIRGINIA UNIVERSITY BULLETIN

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CORRESPONDENCE

Correspondence should be addressed as follows:

ADMISSIONS
Director of Admissions

Library
West Virginia University

ALUMNI MATTERS
Alumni Secretary

UNDERGRADUATE CATALOG, ANNOUNCEMENTS
Director of Admissions

EMPLOYMENT OF SENIORS AND ALUMNI
Placement Service Adviser

EXTENSION
Dean of University Extension

HOUSING
Residence Halls: Director of Residence Halls
University Apartments: Housing Coordinator
Off Campus: Housing Adviser

INFORMATION
Director of News and Information Services

RECORDS AND REGISTRATION
The Registrar

VETERANS AFFAIRS
The Veterans Coordinator

MATTERS OF GENERAL UNIVERSITY INTEREST
The President

WEST VIRGINIA UNIVERSITY, MORGANTOWN, W. VA.
26506

SERIES 65, NO. 11-1 — WEST VIRGINIA UNIVERSITY BULLETIN — MAY, 1965

The *West Virginia University Bulletin* is issued monthly throughout the year. Publications included are the *Announcements* of the College of Law, the Medical Center (the School of Dentistry, the School of Medicine, the School of Nursing, the School of Pharmacy, the Basic Sciences), the Graduate School, the Summer Session; the *Undergraduate Catalog* (College of Arts and Sciences; College of Agriculture, Forestry, and Home Economics; College of Commerce; Creative Arts Center; College of Education; College of Engineering; School of Journalism; Division of Military Science and Aerospace Studies; School of Mines; School of Physical and Health Education, Recreation, and Safety); bulletins of the College of Engineering and the School of Mines; *Proceedings* of the West Virginia Academy of Science; *Victorian Poetry;* and other scholarly and scientific publications.

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West Virginia University

MORGANTOWN

ESTABLISHED FEBRUARY 7, 1867

The Board of Governors

	TERM EXPIRES
OKEY B. GLENN, *President,* Williamson	1968
CHARLES C. WISE, JR., *Vice-President,* Charleston	1969
ALBERT B. C. BRAY, JR., *Secretary,* Logan	1972
RAYMOND E. SALVATI, Huntington	1965
FORREST H. KIRKPATRICK, Wheeling	1966
JAMES H. SWADLEY, JR., Keyser	1967
RALPH J. BEAN, Moorefield	1970
K. DOUGLAS BOWERS, Beckley	1971
WILLIAM G. THOMPSON, Montgomery	1973

PAUL A. MILLER, *Chief Executive Officer,* Morgantown

The Board of Governors has charge of the educational, administrative, financial, and business affairs of the University and Potomac State College of West Virginia University.

Administrative Officers

General

President, PAUL AUSBORN MILLER, B.S.AGR., M.A., PH.D., (1962), 1939.
Provost, JOHN FORD GOLAY, A.B., M.A., D.PHIL.(OXON.), (1961).
Vice President—Administration and Finance, HARRY BRUCE HEFLIN, A.B., M.A., PH.D., (1964).
Vice President—Medical Center, KENNETH EARL PENROD, B.S., PH.D., (1959).
Vice President—West Virginia Center for Appalachian Studies and Development, ERNEST JOSEPH NESIUS, B.S.A., M.S.A., PH.D., (1963), 1960.
Comptroller and Director of Business Affairs, LOUISE KEENER, B.A., (1954), 1929.
Registrar, STANLEY ROBERT HARRIS, A.B., M.S., (1963), 1953.
Assistant Provost, Director of the Office of Student Educational Services, Director of Admission, DAVID NORMAN HESS, A.B., B.D., M.A., PH.D., (1965), 1963.
Director of Libraries, ROBERT FERGUSON MUNN, A.B., M.A., PH.D., (1957), 1952.
Director of Student Affairs, JOSEPH CLAY GLUCK, B.A., B.D., (1948), 1943.
Dean of Women, BETTY BOYD, A.B., (1955), 1948.
Director of Development, DONOVAN HINER BOND, B.S.J., M.A., (1959), 1946.
University Marshal, SAM BOYD, JR., B.F.A., M.F.A., (1959), 1943.
Acting Director of University Relations, HAROLD JOSEPH SHAMBERGER, A.B., M.P.A., (1963), 1949.

Colleges, Schools, and Divisions

Agriculture, Forestry, and Home Economics, ROBERT STANDISH DUNBAR, JR., PH.D., *Dean*, (1964), 1952.
Arts and Sciences, CARL MAYNARD FRASURE, PH.D., *Dean*, (1961), 1927.
Commerce, THOMAS CORWITH CAMPBELL, JR., PH.D., *Dean*, (1964), 1948.
Creative Arts Center, RICHARD EDWARD DUNCAN, PH.D., *Director and Dean*, (1964), 1958.
Dentistry, KENNETH VINCENT RANDOLPH, D.D.S., *Dean*, (1958), 1957.
Education, EARL RUFFNER BOGGS, PH.D., *Dean*, (1960).
Engineering, CHESTER ABBO ARENTS, M.E., *Dean*, (1955).
Engineering Experiment Station, CHESTER ABBO ARENTS, M.E., *Director*, (1963), 1955.
Extension Services, ROMAN JOSEPH VERHAALEN, PH.D., *Dean*, (1964).
Graduate, JOHN FORD GOLAY, D.PHIL.(OXON.), *Dean*, (1961).
Journalism, QUINTUS CHARLES WILSON, PH.D., *Dean*, (1961).
Law, PAUL LAMBERT SELBY, JR., LL.B., *Dean*, (1964).
Medicine, CLARK KENDALL SLEETH, M.D., *Dean*, (1961), 1935.
Mines, CHARLES THOMAS HOLLAND, M.S.E.M., *Dean* (1961), 1930.
Nursing, DOROTHY MAE MAJOR, ED.D., *Dean*, (1960).
Pharmacy, RAPHAEL OTTO BACHMANN, PH.D., *Dean*, (1961).
Physical and Health Education, Recreation, and Safety, RAY OSCAR DUNCAN, ED.D., *Dean*, (1952).
Air Force R.O.T.C., LT. COL. JAN W. JANSSEN, B.S., *Head*, (1964), 1962.
Army R.O.T.C., COL. EDWIN W. REYNOLDS, B.S., *Head*, (1962).

Heads of Other Administrative Offices

Alumni Association, DAVID WOOD JACOBS, A.B., *Executive Secretary*, (1938).
Book Store, RUTH ELEANOR ROBINSON, M.A., *Manager*, (1944), 1939.
Computer Center, ALBERT E. DRAKE, PH.D., *Director*, (1963).
Educational Broadcasting, C. GREGORY VAN CAMP, A.B., *Director*, (1960).
Health Service, JOHN JOSEPH LAWLESS, PH.D., M.D., *Director*, (1944), 1935.

Note: The first date following titles indicates latest appointment. The second date indicates year of first appointment to a University position.

High School, University, Delmas Ferguson Miller, Ph.D., *Director,* (1960), 1949.
E. Grant Nine, M.S., *Principal,* (1960), 1956.
Housing, Robert A. Robards, B.S.B.A., *Coordinator,* (1964), 1960.
Intercollegiate Athletics, Robert Nathan Brown, A.B., *Director,* (1954), 1950.
Mountainlair, Robert F. McWhorter, M.S., *Director,* (1959).
Nursing Service, Audrey Edith Windemuth, M.S., *Director,* (1960).
Personnel, S. Thomas Serpento, M.A., *Director,* (1964), 1960.
Physical Plant, Clifton Wharton Flenniken, Jr., B.S., *Director,* (1961).
Placement, Margaret Cornelia Ladwig, Ph.D., *Adviser,* (1949).
Residence Halls, Agnes B. Hovee, M.A., *Director,* (1956), 1950.
University Hospital, Eugene Leo Staples, M.S., *Director,* (1960).
University Publications, John Luchok, B.S.J., *Editor,* (1953), 1950.
News and Information Services, William Paul Criswell, B.S.J., *Director,* (1964).
Veterans Affairs and University Scholarships, Neil E. Bolyard, M.A., *Coordinator,* (1963).
West Virginia Center for Appalachian Studies and Development
Cooperative Extension Service, Ernest Joseph Nesius, Ph.D., *Director,* (1961).
Continuing Education and Extended Credit Programs, Keith Elden Glancy, Ph.D., *State Chairman,* (1965).
Extension Services, Roman Joseph Verhaalen, Ph.D., *Dean,* (1964).
Institute for Labor Studies, Frederick Anthony Zeller, Ph.D., *Director,* (1965).
International Programs, Ralph E. Nelson, Ph.D., *Director,* (1965), 1964.
Kanawha Valley Graduate Center, Walter Hamilton Walker, Ph.D., *Director,* (1960).
Parkersburg Branch, Billy Lee Coffindaffer, Ph.D., *Resident Director,* (1964), 1950.
Research and Development, Office of, John C. Ludlum, Ph.D., *Director,* (1963), 1946.

Standing Committees

THE UNIVERSITY

ADMISSIONS: The Director of Admissions, the Registrar, and the Deans of all colleges and schools admitting freshmen.
BOARD OF GOVERNORS SCHOLARSHIPS:
Undergraduate: F. J. Holter, Clifford Brown, J. C. Gluck, S. R. Harris, Rogers McAvoy, L. W. Welden, and Q. C. Wilson.
Graduate: F. J. Holter, S. E. Dadisman, G. O'C. Harvey, K. V. Randolph, and J. C. Stickney.
SPACE ALLOCATION: A. R. Collett, C. A. Arents, R. S. Dunbar, Jr., R. O. Duncan, C. W. Flenniken, Jr., S. R. Harris, Louise Keener, and C. R. Wagner.

THE SENATE

EXECUTIVE COMMITTEE: President Miller, R. S. Dunbar, Jr., H. V. Fairbanks, R. E. Foster, S. R. Harris, R. F. Krause, D. F. Miller, and J. R. Williams.
ADULT EDUCATION: R. H. Neff, *Chairman,* W. D. Barns, Sara Ann Brown, E. W. Chick, W. G. Kelly, J. D. McClung, and R. E. Shafer.
COMMITTEES: W. O. Morris, W. T. Doherty, W. W. Fleming, E. G. Scott, and C. P. Yost.
ENGLISH PROFICIENCY: Bernard Zimmermann, D. J. Horvath, Cornelia Ladwig, G. M. Pitts, Irvin Stewart, W. E. Vehse, and Elisabeth Yearick.
FACULTY HOUSING: D. T. Watts, Wincie Ann Carruth, H. C. Evans, M. L. Lugar, E. A. Quarrick, and C. R. Wagner, ex officio.
FACULTY WELFARE: L. H. Brown, W. G. Klingberg, W. D. Lorensen, G. E. Toben, and F. E. Wright.
INSTRUCTIONAL POLICIES AND PRACTICES: Peter Popovich, M. G. Brooks, K. A. Cook, A. C. Core, Q. F. Curtis, E. C. Jones, and H. A. Lindsay.

INTERNATIONAL PROGRAMS: S. F. Herrera, H. V. Fairbanks, R. J. Marshall, R. E. Nelson, R. L. Reid, G. W. Rice, and J. S. Sloan.

LIBRARIES: G. L. Humphrey, R. E. Adams, J. A. Caruso, Leo Horacek, R. F. Munn, ex officio, W. D. Northup, A. E. Singer, and R. H. Theophilus.

MEMBERSHIP: J. D. McClung, J. C. Stickney, and S. J. Weese.

PUBLICATIONS: G. H. Stewart, J. A. Caruso, R. E. Foster, John Luchok, ex officio, R. J. Marshall, and E. H. Tryon.

RESEARCH: R. F. Krause, J. F. Golay, ex officio, H. W. Gould, J. E. Hall, J. B. Hickman, J. C. Ludlum, W. H. Jarecke, J. A. Kent, W. F. Manning, E. J. Nesius, ex officio, J. H. Thompson, and E. H. Tryon.

STUDENT AFFAIRS: J. C. Gluck. Members to consist of the various chairmen of subcommittees on student affairs as appointed by the President.

Convocations and Cultural: J. C. Gluck, Sam Boyd, Jr., R. E. Duncan, and R. F. McWhorter; and five student members.

Discipline: M. L. Vest, Mary C. Buswell, and R. F. Krause.

Student Center Governing Board: J. C. Gluck, Betty Boyd, O. J. Burger, R. F. McWhorter, J. G. Scherlacher, and Dana Wells; and five student members.

Off-Campus Schedules: J. C. Gluck, L. R. Gribble, and C. A. Arents.

Scholarships, Awards, and Student Financial Aids: J. C. Gluck, N. E. Bolyard, Betty Boyd, A. W. Goodspeed, D. N. Hess, and R. M. White.

Social Affairs: J. C. Gluck, Betty Boyd, Beatrice Hurst, R. F. McWhorter, Olive D. Lewis, C. W. Shetler, and H. E. Kidder; and four student members.

Student Fee Funds: J. C. Gluck, Betty Boyd; and three student members.

Student Organizations: R. E. Foster, Wincie A. Carruth, G. R. Thorn; and two student members.

Student Publications: Q. C. Wilson, H. D. Collins, P. W. Gainer, F. E. Wright, and John Luchok; and three student members.

STUDENT ETHICS IN ACADEMIC WORK: J. F. Carruth, F. E. Boyers, S. E. Dadisman, Stanley Farr, J. B. Harley, and L. M. Sizer.

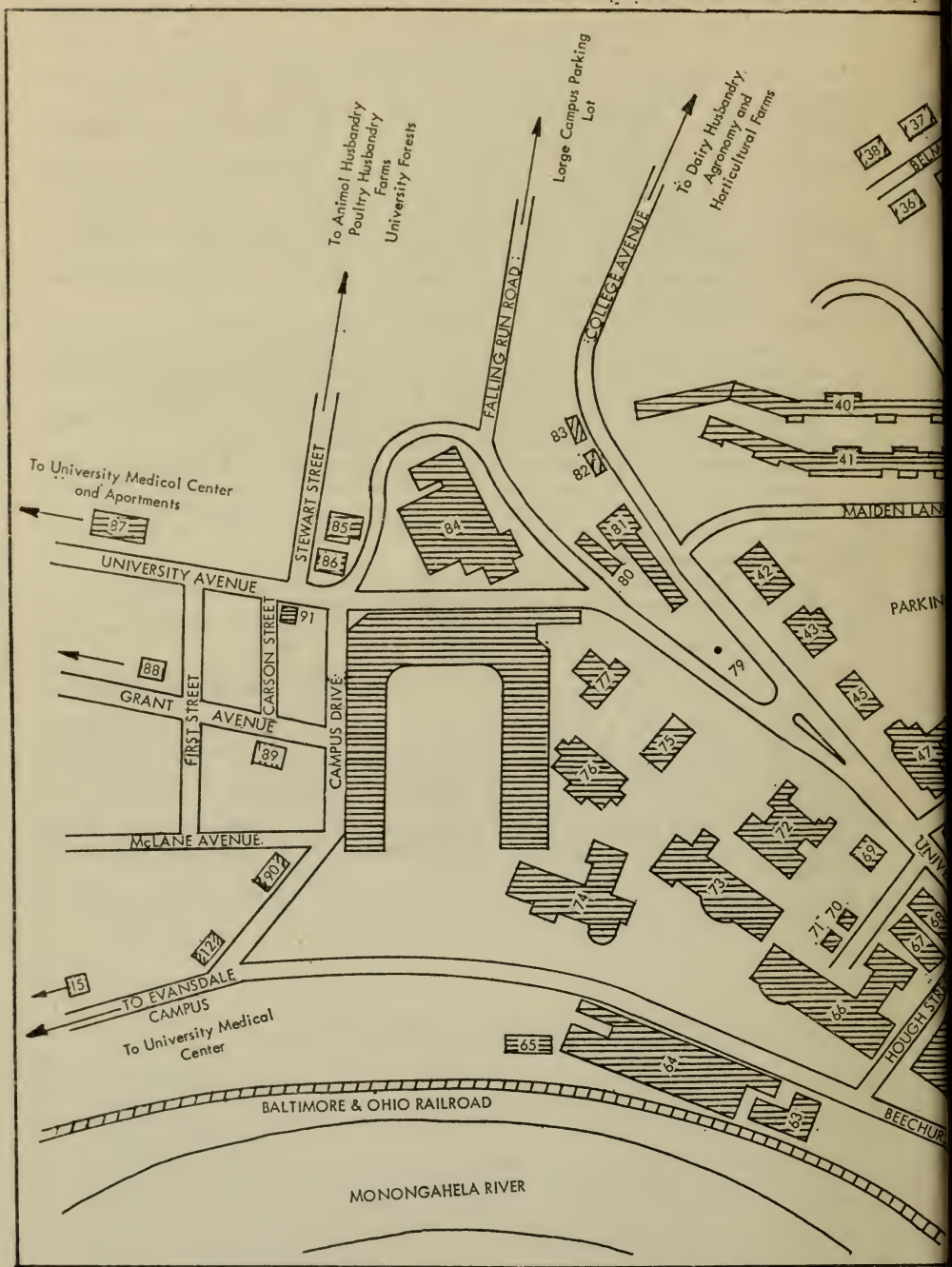
TEACHER EVALUATION: R. E. Sausen, W. M. Bagby, C. W. Brown, Sara Ann Brown, Wincie Ann Carruth, E. G. Frere, J. L. McBee, Jr., Gaynelle McKinney, D. W. H. MacDowell, and D. F. Miller.

TEACHER TRAINING: J. P. Brawner, G. C. Anderson, E. R. Boggs, ex officio, C. N. Cochran, D. E. Hayhurst, M. T. Heald, J. H. Henning, Francisco Herrera, F. J. Holter, H. N. Kerr, and I. D. Peters.

TENURE AND RETIREMENT: H. A. Gibbard, C. R. Bishop, L. H. Brown, T. C. Campbell, Jr., and J. H. Clarke.

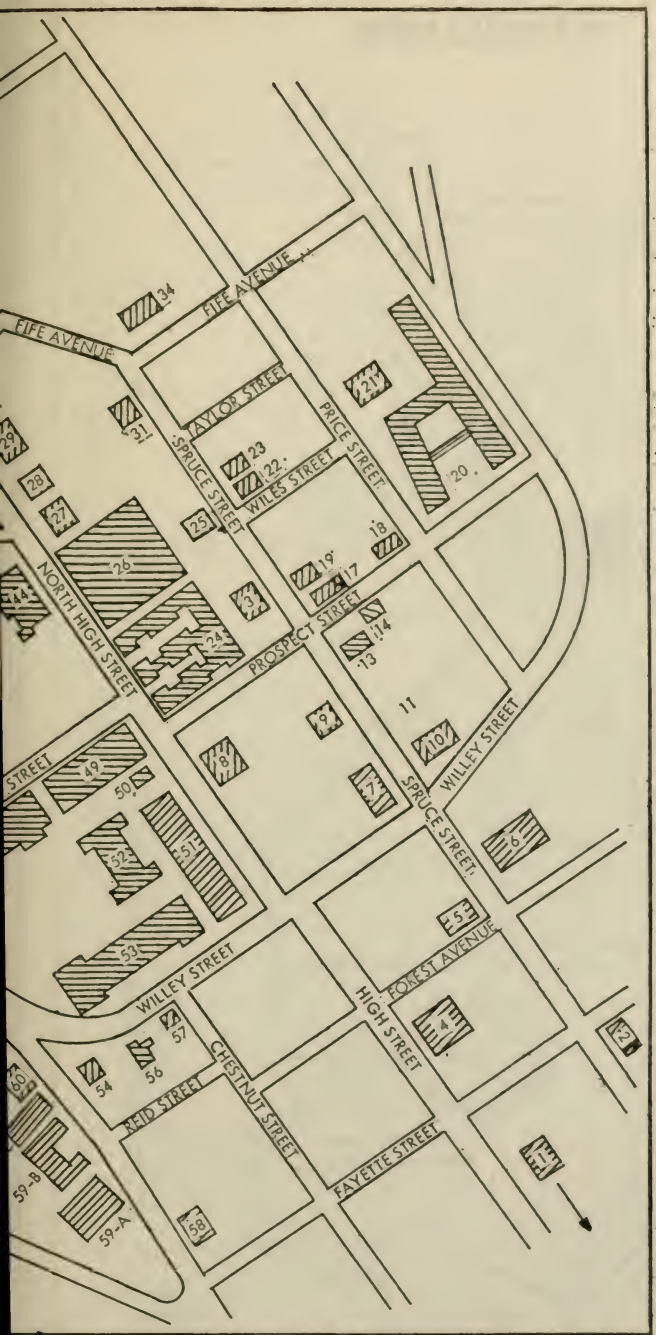
UNIVERSITY RESEARCH GRANTS: J. K. Stewart, E. W. Crooks, E. B. Flink, R. E. Foster, J. F. Golay, A. D. Longhouse, A. S. Pavlovic, and H. P. Simons.

THE WEST VIRGINIA UNIVER



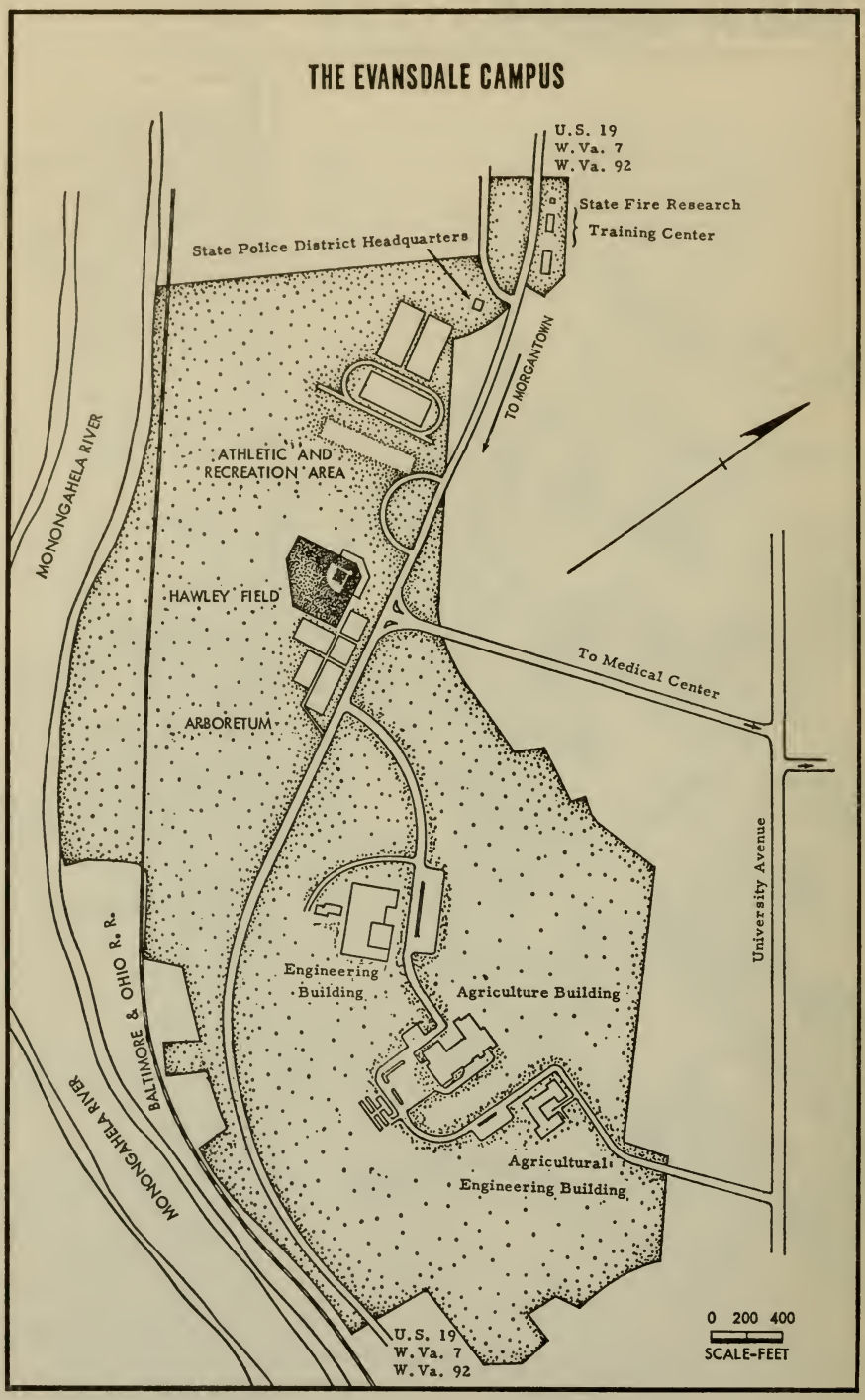
1. Christian Church – Disciples Fellowship
2. Spruce Street Methodist Church
3. Gamma Phi Beta Sorority
4. Baptist Church Student Fellows
5. Greek Orthodox Church – Greek O
6. Presbyterian Church – Westmins

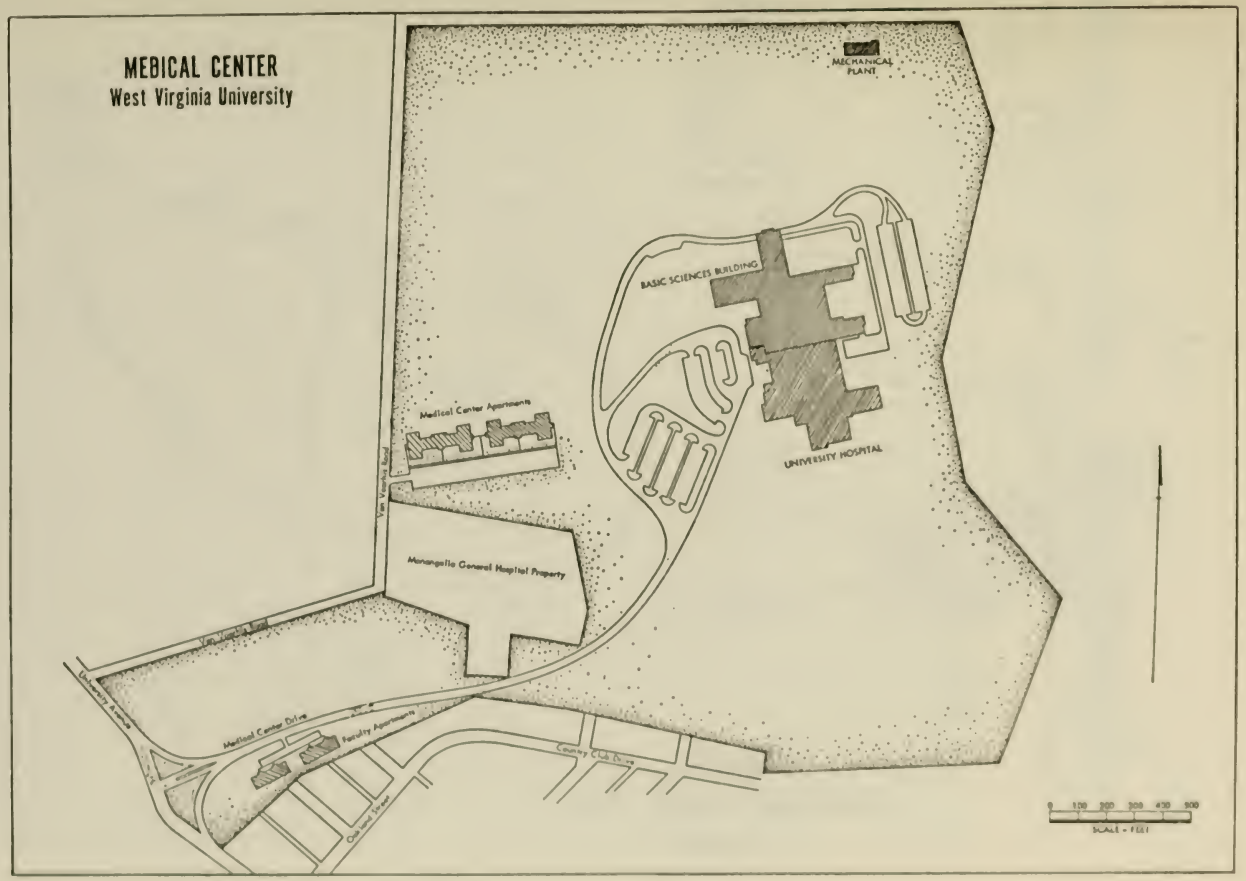
Y MAIN CAMPUS



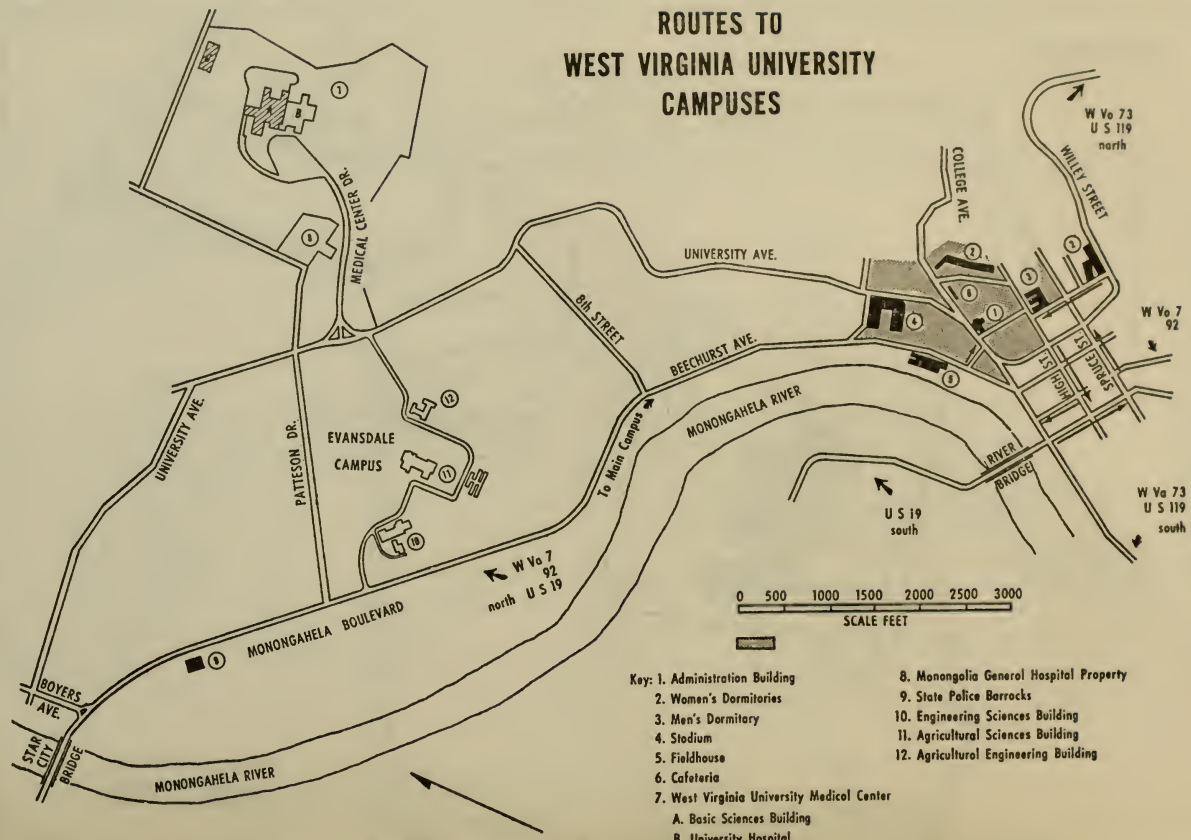
America

7. Episcopal Church – Canterbury Association
8. Chi Omega Sorority
9. Phi Kappa Sigma Fraternity
10. Alpha Phi Sorority
11. Spruce Street Parking Lot
12. Nursery School
13. Laurel Cottage
14. 284 Prospect
15. Lutheran Church
16.
17. Kappa Kappa Gamma Sorority
18. Alpha Delta Pi Sorority
19. Alpha Xi Delta Sorority
20. Arnold Hall Residence and Apartments
21. Delta Gamma Sorority
22. Delta Delta Delta Sorority
23. Alpha Phi Delta Fraternity
24. Gov. Arthur I. Boreman Hall, South
25. Theta Chi Fraternity
26. Gov. Arthur I. Boreman Hall, North
27. Delta Tau Delta Fraternity
28. Kappa Alpha Fraternity
29. Phi Sigma Kappa Fraternity
30. Sigma Chi Fraternity
31. Phi Sigma Delta Fraternity
32. Tau Kappa Epsilon Fraternity
33.
34. Phi Kappa Psi Fraternity
35. Sigma Nu Fraternity
36. Kappa Sigma Fraternity
37. Beta Theta Pi Fraternity
38. Phi Delta Theta Fraternity
39.
40. Terrace Hall
41. Woman's Hall
42. Cafeteria
43. Health Center
44. Armory
45. Reynolds Hall
46. Speech Annex
47. Administration Building
48. Chemistry Building
49. Engineering Building No. 1
50. Faculty Club House and University Extension Office
51. Methodist Church – Wesley Foundation
52. Library
53. Mineral Industries Building
54. Kappa Delta Sorority
55.
56. Home Management House
57. Alpha Sigma Phi Fraternity
58. Jewish Youth Center – Hillel Foundation
59-A St. Theresa Catholic Church
59-B Newman Hall (Catholic youth group)
59. C St. John's Chapel
60. Pi Beta Phi Sorority
61. Music Building
62. Lutheran Student Association
63. Industrial Arts
64. Field House
65. Heating Plant
66. Physics Building
67. Bookstore
68. Law Building
69. President's Home
70. Counseling Center
71. Placement Office
72. Elizabeth Moore Hall
73. Armstrong Hall
74. Brooks Hall
75. Martin Hall
76. Woodburn Hall
77. Science Hall
78. Mountaineer Field
79. U.S.S. W.Va. Mast
80. Oglebay Hall Annex
81. Oglebay Hall
82. Residence Housing Office
83. 721 College Avenue
84. Mountainlair
85. Plant Pathology Greenhouse
86. Forestry Building
87. Evangelical United Brethren Church – Student Youth Fellowship
88. Alpha Gamma Rho Fraternity
89. Lambda Chi Alpha Fraternity
90. Pi Kappa Alpha Fraternity
91. Industrial Arts Annex


THE EVANSDALE CAMPUS
U.S. 19
W.Va. 7
W.Va. 92
State Fire Research
Training Center
State Police District Headquarters
TO MORGANTOWN
MONONGAHELA RIVER
ATHLETIC AND
RECREATION AREA
HAWLEY FIELD
To Medical Center
ARBORETUM
University Avenue
Engineering
Building
Agriculture Building
BALTIMORE & OHIO R. R.
MONONGAHELA RIVER
Agricultural
Engineering Building
U.S. 19
W.Va. 7
W.Va. 92
0 200 400
SCALE-FEET


MEDICAL CENTER
West Virginia University
MECHANICAL PLANT
BASIC SCIENCES BUILDING
UNIVERSITY HOSPITAL
Medical Center Apartments
Morgantown General Hospital Property
Medical Center Drive
Faculty Apartments
Country Club Drive
Oakland Road
University Avenue
SCALE - FEET

ROUTES TO WEST VIRGINIA UNIVERSITY CAMPUSES



Part I

History, Description, and Organization

History

West Virginia University was founded as a result of the Congressional Land-Grant (Morrill) Act of July 2, 1862, originally proposed in Congress for the benefit of agriculture and the mechanic arts. The State Legislature accepted conditions of the Act on October 3, 1862. Because of the State's questionable wartime status, the Legislature later specifically requested that the Act's benefits be extended to West Virginia. This was done by Congress on April 19, 1864, with the issuance of 150,000 acres in land scrip for public tracts, principally in Iowa and Minnesota.

The trustees of Monongalia Academy, on January 9, 1866, offered its property to the State, including the site and other property of nearby Woodburn Female Seminary, appraised at $51,000, on condition that the proposed college "be located permanently at or near Morgantown." The Legislature accepted the offer February 7, 1867, and established the "Agricultural College of West Virginia."

Government and control of the college were vested in a Board of Visitors composed of one member from each of the State's eleven senatorial districts. In response to requests from President Alexander Martin, the Legislature, by an act of December 4, 1868, changed the name of the "Agricultural College" to "West Virginia University." At the same time the name of the controlling body was changed from "Board of Visitors" to "Board of Regents." Primarily to serve political purposes, the number of regents was changed from time to time until 1919, when government and control were vested in a State Board of Education of five members, including the State superintendent of free schools as the ex officio chairman. This plan was unsatisfactory, and an act of April 14, 1927, vested control of the University's academic matters in a Board of Governors of seven members. In 1947, the Board was increased to nine members, and made responsible for both academic and financial affairs of the University.

Up to the end of the century, supporters of the institution were divided on whether to work for a "State-supported University," or a "first-class State-supported college." Until the early 1890's, the "College Plan" dominated, with "departments" and "schools" functioning autonomously, and with professors generally occupying "chairs" and operating provincially.

But the Hatch Act (1887) and the Second Morrill Act (1890) stimulated more progressive thinking among leaders in higher education. Many of them who were familiar with European systems (including the University's President, James L. Goodknight) helped bring the "University Plan" into the ascendancy. President Goodknight, in 1895, set out to convert the "University" into just that.

The eight Academy Schools, five Technical and Professional Schools, and four Special Courses were organized into four colleges, each with a dean: Arts and Sciences, Powell B. Reynolds; Engineering and Mechanic Arts, William S. Aldrich; Agriculture, John A. Meyers; and Law, Judge Okey Johnson. The School of Music was established in 1897, a "Summer Quarter" or "Continuous Session" in 1898, and a College of Medicine in 1900.

Both the College of Medicine and the Summer Quarter were discontinued in 1901. Beginning in 1897 the College of Arts and Sciences and the College of Engineering and Mechanic Arts functioned without deans with more or less autonomous departments and schools to 1911 when the deanships were revived. In 1902 a semblance of the "Summer Quarter" was revived in the "Summer School," which in 1932 became the "Summer Session." Alternating between a department and a school organization since 1867, Military Science and Tactics became a division in 1911. The arrangement made in 1903 with the College of Physicians and Surgeons, Baltimore, for maintaining a University College of Medicine proved unsatisfactory. It was

discontinued in 1910, and the "Medical Sciences" were offered in a department of the College of Arts and Sciences to 1912, when the School of Medicine was established. In 1914 a Department of Pharmacy was established in the School of Medicine. In the same year the Department of Home Economics, previously a unit in the College of Arts and Sciences, was transferred to the College of Agriculture. The Division of Agricultural Extension was organized in 1912 and the Division of Mining and Industrial Extension in 1914.

The building program inaugurated in 1917 brought additional expansions and curricular offerings. Among the former were the Engineering Experiment Station, 1921, and the School of Mines, 1926, which in 1930 became an independent unit. In 1927 the courses in education were transferred from the College of Arts and Sciences to the newly created College of Education, and in 1928 the Division of Physical Education was established. Offerings were being improved meanwhile through additional and better-qualified personnel. In January, 1930, the Board of Governors established a Graduate School authorized to offer graduate degrees in certain indicated fields.

The Depression (1929-35) slowed expansion, but progress was resumed in 1936 when the Department of Pharmacy was discontinued as a unit of the School of Medicine and converted into the College of Pharmacy. The next year the Division of Physical Education and the Department of Athletics were combined into the School of Physical Education and Athletics. At the same time (1937), the course in Forestry, begun in 1935 as a two-year curriculum in the College of Agriculture, was expanded to a four-year course, and the name of the sponsoring unit was changed to the College of Agriculture, Forestry, and Home Economics. In 1939 the Department of Journalism was discontinued as a unit in the College of Arts and Sciences and became the School of Journalism. The same year a Department of Art was established in the College of Arts and Sciences. In 1940 the College was further enlarged by the inclusion of a Department of Social Administration, authorized to offer a graduate curriculum leading to the professional Certificate of Social Work. In 1941 the name was changed to the Department of Social Work, and in 1944 the Department was authorized to establish an undergraduate curriculum in social work leading to the Bachelor of Science Degree.

In 1950 the Board of Governors authorized the degree of Master of Social Work and approved the establishment of a two-year curriculum leading to that degree. In 1944 a four-year course leading to the B.S. (Medical Technology) Degree was approved to be given jointly by the College of Arts and Sciences and the School of Medicine. In 1948 the Board of Governors approved an order authorizing the College of Arts and Sciences to offer a general course as an integral part of its curriculum and an optional lower-division program of general studies. In 1951, the Department of Economics and Business Administration was discontinued as a unit in the College of Arts and Sciences and converted into the College of Commerce. In 1953 the School of Dentistry was established. In 1958, the College of Pharmacy was reconverted into the School of Pharmacy, marking the integration of the School into the University's expanding medical sciences program. The University's Kanawha Valley Graduate Center of Science and Engineering was established at Institute, with the first classes beginning in September of 1958. In 1961 the name was changed to Kanawha Valley Graduate Center of West Virginia University. In 1960 the School of Physical Education and Athletics was changed to the School of Physical and Health Education, Recreation, and Safety. In 1960 the School of Nursing was established.

On February 5, 1963, the University's Board of Governors approved the establishment of the West Virginia Center for Appalachian Studies and Development. Prior to this date, the West Virginia State Legislature and the Governor passed and approved legislation (House Bill No. 231) which changed the name of the Agricultural Extension Service to the Cooperative Extension Service and realigned it administratively from the College of Agriculture, Forestry, and Home Economics to the West Virginia Center for Appalachian Studies and Development.

The Creative Arts Center and the Institute of the Biological Sciences were established in 1964. The Creative Arts Center consists of the Division of Music, Art, and Drama.

PRESIDENTS OF THE UNIVERSITY

The University has had fifteen regular presidents, eleven acting presidents, and one chairman of the faculty. Together, with their periods of service, they were:

ALEXANDER MARTIN
Apr. 3, 1867-Aug. 12, 1875

JOHN WORK SCOTT, *Vice-President*
Sept. 6, 1875-Mar. 27, 1877 (*acting*)

JOHN RHEY THOMPSON
Mar. 28, 1877-Mar. 12, 1881

DANIEL BOARDMAN PURINTON, *Vice-President*
March 13, 1881-1882 (*acting*)

WILLIAM LYNE WILSON
1882-1883

ROBERT CARTER BERKELEY, *chairman of the faculty*
1883-1885

ELI MARSH TURNER
1885-July 21, 1893

POWELL BENTON REYNOLDS, *Vice-President*
July 24, 1893-1895 (*acting*)

JAMES L. GOODKNIGHT
1895-Aug. 6, 1897
(from Aug. 6-19, 1897, vice-president Robert Allen Armstrong was nominally acting president)

JEROME HALL RAYMOND
Aug. 10, 1897-1901

POWELL BENTON REYNOLDS
Mar. 21-July 31, 1901 (*acting*)

DANIEL BOARDMAN PURINTON
Aug. 1, 1901-July 31, 1911

ALEXANDER R. WHITEHILL
Aug. 1, 1911-Sept. 30, 1911 (*acting*)

THOMAS EDWARD HODGES
Oct., 1911-Aug. 31, 1914

FRANK BUTLER TROTTER
July 9, 1914-1916 (*acting*)
1916-1928

JOHN ROSCOE TURNER
1928-Dec. 31, 1934

ROBERT ALLEN ARMSTRONG
Jan. 1-Sept. 30, 1935 (*acting*)

CHAUNCEY SAMUEL BOUCHER
Oct. 1, 1935-Aug. 31, 1938

CHARLES ELMER LAWALL
Sept. 1, 1938-1939 (*acting*)
1939-Aug. 31, 1945

CHARLES THOMPSON NEFF, JR.
Sept. 1, 1945-1946 (*acting*)

IRVIN STEWART
1946-Aug. 25, 1958

CLYDE LEMUEL COLSON
Aug. 26, 1958-Jan. 31, 1959 (*acting*)

ELVIS JACOB STAHR, JR.
Feb. 1, 1959-Jan. 25, 1961

CLYDE LEMUEL COLSON
Jan. 26-Dec. 31, 1961 (*acting*)

PAUL AUSBORN MILLER
Jan. 1, 1962-

Description

LOCATION

The main campuses of West Virginia University are in Morgantown, Monongalia County, 80 miles southeast of Wheeling and 190 miles north of Charleston. The community is served by the Baltimore and Ohio Railroad (limousine service between Morgantown and Grafton), Lake Central Airlines, several truck systems, five bus lines, and W. Va. Routes 7, 73, and 92, and U. S. Routes 19 and 119. Morgantown is located on the Monongahela River, 72 miles south of Pittsburgh, Pa.

THE PHYSICAL PLANT

The three Morgantown campuses of West Virginia University consist of some 600 acres, including 75 acres of the Main Campus near the center of Morgantown; 275 acres in the Evansdale section, one and one-half miles north of the Main Campus; and 260 acres at the Medical Center. The University also has more than 11,000 acres of experimental farms and forests, and educational camps located in many parts of the State.

The physical plant includes 59 State-owned buildings on the Morgantown campus; five demonstrational and experimental farms near Morgantown; four additional experimental farms and two Cooperative Extension Centers in the State; a biological station; and a summer camp for forestry students.

Organization

ACCREDITATION

West Virginia University is a member of the North Central Association of Colleges and Secondary Schools. It is accredited by the North Central Association and various agencies accrediting the professional schools.

GOVERNMENT

Direction of educational, administrative, financial, and business affairs is vested in the Board of Governors. The Board is bipartisan and consists of nine members appointed by the Governor with staggered terms of service.

The President of the University is the Chief Executive Officer of the Board of Governors and is advised and assisted in carrying out University policies by a *Council of Administration.*

The *University Senate* is a legislative body with jurisdiction over academic matters that concern the University and all matters that concern more than one college or school. The Senate consists of members of the faculty with rank of assistant professor or higher, together with certain administrative officers.

The *Graduate Faculty* sets the requirements and standards for admission to candidacy for graduate degrees and for the awarding of graduate degrees.

OPERATING FUNDS

Funds for operating the University's various divisions are derived from the following sources: (1) interest on the land-grant endowment; (2) annual appropriations by the Legislature; (3) Federal Morrill-Nelson and Bankhead-Jones funds; (4) student activities fees; (5) Hatch Act, Amended; (6) Agricultural Extension Consolidated; (7) tuition of high school students paid by Monongalia County Board of Education; (8) income derived from sale of farm and dairy products, as well as income from athletics, dormitories, dining halls, book store, student activities, hospital clinics, etc.; (9) grants by Federal agencies for special research and extension projects; (10) contributions by private benefactors for the support of scholarships, loan funds, and prizes, and (11) revenues from the State soft-drinks tax dedicated to the establishment of a medical center for teaching and research in medicine, dentistry, nursing, and medical technology.

SUMMER SESSION

The Summer Session is ten weeks in length. It opens in June and closes in August.

Requirements for admission and character of the work offered are the same for the Summer Session as for the regular academic year.

University High School is in session for secondary-school student teaching, practice supervision, and observation. The University Laboratory Elementary School is in session during the first six weeks for elementary school observation and practice supervision.

Credit may be obtained towards the Bachelor's, Master's, and toward the Doctorate. Offerings are varied from summer to summer so that students may complete work for the Master's Degree by attending summer sessions only.

For complete information and description of courses, see the *Summer Session Bulletin.*

EVENING EDUCATION

The University offers a program of evening classes for the benefit of those who wish to continue their education beyond the high-school level and who are unable to attend the usual day classes.

All courses are taught by resident faculty members and carry full college residence credit. Many of these courses may be counted toward advanced degrees.

ARBORETUM

The West Virginia University Arboretum was established August 4, 1948, on a 100-acre tract of open field, wooded hillside, and low, moist bottomland situated between the Monongahela Boulevard and the Monongahela River. An elevation drop of approximately two-hundred feet, from the Arboretum entrance on the boulevard to the river, presents a variety of natural habitats in which several hundred species of native West Virginia trees, shrubs, and herbaceous plants may be seen.

Designed primarily as an outdoor biology laboratory for educational purposes, the Arboretum also is important for its aesthetic value to the general public. It offers a place for research and study and a place for rest and relaxation. Approximately three and one-half miles of nature trails lead through the area and are so arranged that the visitor may take from a short half-hour stroll to as much as a four-hour hike without retracing his steps.

COMPUTER CENTER

Although the University has had computer facilities since 1960, the Computer Center was organized as a separate office in 1963. A director was appointed soon afterwards to provide leadership in the development of a research-oriented program in computer services and computer science.

The only computer center in any university or college in West Virginia, the Computer Center provides a wide range of services to faculty members and organized research bureaus. The exact nature of the services provided will vary with each project, but the range includes general consultation, consultation on programming and systems problems, consultation on statistical aspects of research work, direct programming services, library program services, machine operation, print-out of results, card punching, verifying, and other supporting services.

Three independent computers, the IBM 1620, 1401, and 7040, are available for administrative services, operations and systems support, and research and instruction.

DEVELOPMENT OFFICE

The development program of West Virginia University coordinates much of the complexity of financing and improving educational activities, and is centered in the Development Office, jointly maintained by the University and by the West Virginia University Foundation, Inc.

Through this office, all voluntary support of the University is channeled, including support from alumni and friends on an annual basis; from industries and businesses, both within and outside West Virginia; from individuals, through major gifts and bequests; from charitable foundations; and from various governmental agencies, other than annual legislative allocations.

The program's primary aim is to blend into one strong supporting unit all the various "publics" of the University, including the institution's alumni, friends, faculty, governing body, students and parents, various state interest groups, industrial and corporate groups with a stake in the University's future, and all philanthropic and governmental sources of educational aid.

INTERCOLLEGIATE ATHLETICS

The basic objectives of Intercollegiate Athletics at West Virginia University are:

1. To provide an opportunity for students highly skilled in athletic sports to develop their ability as a preparation for coaching positions, as teachers of physical education, and for their own physical, social, and emotional improvement.
2. To develop an understanding and an appreciation of the place which intercollegiate sports occupies in American culture and to develop sound educational attitudes toward sports.
3. To educate the student body in the appreciation of sports and the best way to enjoy them from the point of view of good sportsmanship.
4. To serve as a focal point for the morale, spirit, and loyalty of the students by providing a common meeting ground and enthusiasm.

5. To provide a wholesome program of sports in which students, alumni, and friends of the University may share, to the end that the loyalty of these groups to the University and its work may be constantly renewed, strengthened, and united.

Additional objectives of the Intercollegiate Athletic program are:

1. To set desirable examples of good physical skill, team play, sportsmanship, health habits, and other characteristics that go with skilled sports, both individual and team.

2. To provide a living laboratory of democracy in action, where all players are treated without favor or prejudice, to learn to respect the rights of others, obey the rules, and judge others for what they can do.

3. To broaden the social experience of players and spectators through travel, visiting other schools, and making the acquaintance of other young people of similar age.

Activities of the Department of Intercollegiate Athletics are administered, under the President of the University, by the Director of Intercollegiate Athletics, and by the Athletic Council. The council is composed of seven members: four faculty, two alumni, and one student. The Dean of the School of Physical and Health Education, Recreation, and Safety serves as a member, and the Director of Athletics is the executive officer.

Instruction and training are given each year in seasonal sports such as football, cross-country, basketball, wrestling, baseball, swimming, gymnastics, track, tennis, rifle, golf, and soccer. Matters concerning athletic eligibility regulations are decided by the Athletic Council. Scholastic eligibility regulations are established by the faculty of the University.

The rules and policies of the Southern Conference govern participation in intercollegiate athletics. In addition, sophomores must have a 1.5 grade-point average, juniors a 1.7 average, and seniors a 1.9 average.

INTRAMURAL PROGRAM

A broad intramural sports program for men and women is provided by the School of Physical and Health Education, Recreation, and Safety. All students are encouraged to participate in organized sports and wholesome recreation. Competition is promoted between student groups and individuals. Such natural groupings as classes, fraternities, sororities, dormitories, and other nonfraternity units form the basis for activity in competitive sports.

The following activities are conducted for men: soccer, badminton, cross-country, tennis, volleyball, handball, basketball, swimming, relays, golf, bowling, archery, basketball free throwing, softball, horseshoes, outdoor track, mountainclimb, and rifle. Other activities may be organized when there is sufficient interest on the part of students and when facilities permit. Leagues are organized to accommodate fraternities, residence halls, and nonfraternity groups.

The following activities are conducted for women: volleyball, badminton, swimming, basketball, bowling, softball, table tennis, shuffleboard, archery, and tennis. Interclass tournaments for physical education majors are held in the following activities: volleyball, badminton, basketball, swimming, tennis, and softball. As the demand for more activities develops and when facilities become available, the program will be broadened.

UNIVERSITY BROADCASTING

West Virginia University has been active in radio broadcasting since the early twenties, and in television during the past eleven years.

The Department of Radio, Television, and Motion Pictures plans and produces programming from all areas of the University. The Cooperative Extension Service, the School of Journalism, the Creative Arts Center, and the Department of Speech are particularly active in broadcasting activities.

Most programs are prepared for presentation over West Virginia's fifty-five commercial radio stations and nine television stations. Radio programs are prepared on campus. Most television presentations are recorded on video tape at area commercial and educational stations and distributed statewide.

Students interested in broadcasting techniques and participation opportunities are offered actual experience in the preparation and presentation of University radio and television productions. Participation in these programs is through formal work in departments offering technique courses, as extracurricular activities, and as individual interest in production work.

Coverage of intercollegiate athletic events is under the supervision of the University Athletic Council.

UNIVERSITY PUBLICATIONS

The following publications are issued regularly at the University:

1. The *West Virginia University Bulletin* is issued monthly. The series includes this *Undergraduate Bulletin*, *Announcements* of the College of Law, the Medical Center, the Graduate School, and the Summer Session, and other occasional University publications.
2. The bulletins and circulars of the Agricultural Experiment Station.
3. The circulars of the Cooperative Extension Service, including *Farm Women's Club* leaflets, *4-H Suggestions*, *Treasures of the Trail*, and special pamphlets.
4. Cooperative Extension News Service bulletins published weekly.
5. The bulletins of the Engineering Experiment Station and of the School of Mines.
6. The *West Virginia Law Review*, official publication of the West Virginia Bar Association, edited by the faculty of the College of Law.
7. Miscellaneous publications under the title of *Philological Papers* or *Biological Studies*.
8. *The Student Directory*, annual directory of the student body, published by the University Book Store.
9. The annual *Proceedings* of the West Virginia Academy of Science.
10. The *West Virginia Fourth Estatesman*, a quarterly publication, edited by the faculty of the School of Journalism.
11. *Notes for New Mountaineers* is published under the direction of the Office of Publications. It is distributed to each member of the entering class, and to transfer students and foreign students.
12. *The W.V.U. Directory* is issued in the fall by the Office of Publications.
13. Miscellaneous publications of the Bureau for Government Research and the Bureau of Business Research.
14. The *Daily Athenaeum*, student-edited newspaper, is published Tuesday through Friday mornings by students of the School of Journalism. Heads of the editorial and business staffs are appointed by the University Committee on Student Publications from a list of eligible candidates certified by the Dean of the School of Journalism.
15. The *Monticola*, student yearbook, is published by upperclass students. The editorial and managerial staff is appointed by the University Committee on Student Publications.
16. *Victorian Poetry*, a critical journal of Victorian literature, is edited by the Department of English and the Office of Publications.
17. *The WVU Woman*, a handbook for and about the women students of the University, is published by Associated Women Students under the editorial supervision of the Office of Publications.
18. Annual publication of the Program for the *Festival of the Fine and Lively Arts*, an event sponsored by the Creative Arts Center. The bulletin is printed under the supervision of the Office of Publications.
19. Miscellaneous publications of the West Virginia Center for Appalachian Studies and Development, and the Office of Research and Development.
20. Miscellaneous publications of the University Library.

ASSOCIATED INSTITUTIONS

The West Virginia Academy of Science was organized in 1924 to bring about closer affiliation among scientists of the State and to encourage the pursuit of scientific work in West Virginia. It is now a body of nearly five hundred persons who are interested in the service of science in the development of the State. Members

are widely distributed throughout the State and adjoining states and are representative of colleges, high schools, and industries. A Collegiate Academy and a Junior Academy are sponsored by the Senior Academy. Annual meetings, held at various institutions of higher learning, are divided into sections on biology, chemistry, geology and mining, mathematics and physics, education, psychology, history of science, and social sciences. The *Proceedings* of the annual meeting are published under the auspices of the University.

The West Virginia Geological and Economic Survey, located in the Mineral Industries Building at West Virginia University, is governed by its own Commission and receives separate appropriations. The Survey was founded by an Act of the Legislature in 1897. It is recognized as one of the leading State surveys.

One of its major purposes is to investigate all natural resources, especially mineral resources of the State, and make results of the investigations available to the public in the form of written reports and maps.

Accomplishments of the Survey include geologic soils and topographic mapping of the State, as well as preparation of numerous special reports on the State's mineral and other natural resources. A new topographic mapping program, using aerial photographs, is well under way.

Core drill examinations of river terrace deposits and mineral investigations of rock strata are now being made with new equipment recently acquired.

A Division of Archeology is included in the Survey.

The professional staff is composed of nine geologists, a spectroscopist, a cartographer-draftsman, and two archeologists. The State Geologist is a member of the faculty and there is close cooperation between the Geological Survey and the Department of Geology of the University. Faculty members and geology graduate and undergraduate majors are employed part-time. Two geologists from the U. S. Geological Survey are assigned here for cooperative studies on ground waters. The large collection of well cuttings and cores on file bring petroleum geologists from major petroleum companies throughout the United States here to study them.

The Materials Laboratory of the State Road Commission is housed in the Engineering Sciences Building. Its work includes testing of all materials used by the Commission and research problems of road construction and maintenance in West Virginia. The State Road Commission and the College of Engineering cooperate on research and development programs.

Services

OFFICE OF STUDENT EDUCATIONAL SERVICES

Effective July 1, 1965, the newly formed Office of Student Educational Services will coordinate those non-classroom student services that supplement the classroom learning. The aim of this office is to respond to the need of the University as a whole to recognize itself as an instrument of education and to recognize that effective classroom learning cannot be divorced from the total University environment.

BOOK STORES

The University operates on each campus a complete book and stationery store where students may purchase books, supplies, and professional equipment needed in connection with their class work.

The Main Campus store is located in the Book Store Building, with entrances from both Hunt Street and University Avenue. The Medical Center Branch Book Store is in the Basic Sciences Building, ground floor. The Evansdale Campus store is in the Engineering Sciences Building, ground floor. The store at the Parkersburg Branch is located adjacent to the classroom building, in the same building as the gymnasium.

The stores have available for sale text books, new and used copies, general books in all categories, professional and technical books and supplies, art prints, a complete line of school, office, and photographic supplies, West Virginia University imprinted gift merchandise, sporting goods, and wearing apparel.

EMPLOYMENT AND PLACEMENT

The Senior and Alumni Placement Service

The University Placement Service provides assistance in vocational and job selection. This service does not end with placement of the student on his first job, but may be referred to at any time in the future.

The Placement Office is on Hunt Street across from the Physics Building. In addition to registration procedures, which include counseling in the techniques of job application, this service analyzes the changing market for graduates, assists alumni seeking promotion or change of position, cooperates with all individuals and agencies interested in placement, provides credentials for registered students to potential employers, and is engaged in continuous research in the interest of improving these services. A meeting place is provided for students seeking jobs, visiting company, governmental, and educational representatives, and faculty members whose comments are sought by employers.

A vocational library is maintained to assist any student having difficulty in deciding upon a career as well as to enable those graduating to review the kinds of opportunities available in their fields.

The Placement Service cannot furnish credentials to commercial agencies.

HEALTH SERVICE

The University Health Service provides medical care to students of the University and supervises health on the campus. The staff includes three full-time and two part-time physicians, seven nurses, two laboratory technicians, and clerical personnel. The University Pharmacy, housed in the Health Center, is managed by the School of Pharmacy. The departments of Pathology and Microbiology cooperate in the laboratory examination of diagnostic materials.

The Health Service occupies the University Health Center, constructed in 1942. This fireproof three-story building is centrally located, fronting on College Avenue adjacent to Oglebay Hall. On the first floor are the treatment rooms, offices, and pharmacy. The second floor is occupied by laboratory and X-ray departments, and offices for physicians. The third floor contains a well-equipped Infirmary.

The Health Service is in operation from 8:00 A.M. to 5:00 P.M. daily except Saturday and Sunday. Saturday hours are 8:00 A.M. to noon. Physicians are in attendance from 9:00 A.M. to 12:00 noon and 2:00 P.M. to 5:00 P.M. A nurse is present at all times in the Infirmary, and a University physician can always be reached by calling the Health Service, 293-2311.

Each officially enrolled University student pays a fee which provides for medical examination and treatment by University physicians. Moderate additional charges are made for room calls, X-rays, laboratory tests, minor operations, treatment of fractures, and drugs furnished by the Health Service or Pharmacy.

The Health Service gives special physical examinations to students in competitive athletics, to University food handlers, to employees of the Physical Plant Department, and to other groups as occasion may arise.

The Infirmary

Students who need bed care for illness are hospitalized in the University Infirmary. The Infirmary is open only to full-time students. It is the policy of the Health Service to have all students requiring such care in the Infirmary. Students hospitalized in the Infirmary are under the care of Health Service physicians, although other qualified physicians may be seen in consultation when necessary. Patients will be admitted and discharged on the order of Health Service physicians.

Upon admission to the Infirmary the student receives two days of hospitalization without charge except for laboratory, X-ray, special medications, and private duty nurse fees. No additional charge is made for general nursing care, dressings, routine medications as commonly supplied by the Health Service, and food as ordered by the physician in charge. Special nurses, when necessary, are at the expense of the student.

A student may not receive more than thirty days hospitalization for any one illness. Patients are to leave when discharged by the University physicians. When

it becomes evident that a student's illness will be so prolonged as to prevent his completing work of the current semester, he may be discharged from the Infirmary when the attending physician or the Director of the Health Service considers that he may be moved without danger to his health. The services as indicated above are subject to the availability of space in the Infirmary. Twenty-two beds at present are ready for use.

Student Insurance

A voluntary insurance plan is available to students to supplement the medical care offered by the Health Service. This plan provides for payment for hospitalization, surgeon, and consultant's fees, and other medical costs throughout the year, both in Morgantown and elsewhere. For cost of this insurance and details concerning coverage see the brochure available at the Health Service.

LIBRARY

The Library provides books and related materials for teaching, research, and cultural purposes. It maintains well-balanced collections in all subject fields included in the University curricula. Although primarily intended to supply the needs of the faculty and students of the University, the collections are available to any resident of West Virginia through the Library Extension Service Department. Facilities are available for the reproduction of material by microfilm and photostat.

The holdings of the University Libraries include over 500,000 books, plus 34,000 maps, 10,000 reels of microfilm, and over 50,000 technical reports. The bulk of this material is housed in the General Library. The other major collections are the Agricultural-Engineering Library, the Law Library, and the Medical Center Library. Some 5,000 periodicals are received currently. The Library is a depository for United States government publications.

The West Virginia Collection, located in the General Library, contains over three million manuscripts, papers, and records relating to the history and development of the State.

During regular sessions, except on holidays and vacations, the Library is open from 7:55 A.M. to 11:00 P.M., Monday through Thursday; from 7:55 A.M. to 10:00 P.M. on Fridays; from 7:55 A.M. to 5:00 P.M. on Saturdays; and from 2:00 P.M. to 10:00 P.M. on Sundays. During the Summer Session the weekday hours are from 7:55 A.M. to 9:00 P.M.; and only the Reserve Collection is available on Sundays from 2:00 P.M. to 5:00 P.M. During periods when the University is not in session, the hours are from 9:00 A.M. to 5:00 P.M., Monday through Friday; 9:00 A.M. to noon on Saturdays; closed all day Sundays and holidays (New Year's Day, Memorial Day, July 4, Thanksgiving Day, and Christmas Day). Changes in scheduled hours are posted in advance.

MOUNTAINLAIR

Mountainlair, the temporary University student center, has served the campus since 1948 in providing programs, activities, and services for the social, cultural, and recreational needs of the campus community. Located near the northeast end of Mountaineer Stadium, Mountainlair hosts major campus social events, and provides a special array of programs throughout the academic year. The Mountainlair calendar includes parties, dances, a popular film series, art displays, exhibits, and concerts.

The facilities include a large combination snack bar-cafeteria, a television area, a browsing lounge, a music listening room, meeting rooms, office space, and a large ballroom that also serves as a table tennis and billiards area.

The key word at the Mountainlair information desk is "service." As the campus information center, this booth renders many worthwhile services to accommodate the University community.

The Mountainlair swimming pool is regulation intercollegiate size. In addition to providing recreational swimming facilities for University personnel, it serves as the home of the University swimming team and as a classroom for students majoring in physical education.

A professional staff devotes full time toward creating and maintaining a pleasing atmosphere for students. Diversified programs of activities and events are designed to fit student needs and interests. Special activities are planned by the Mountainlair Program Council. The Council includes student representatives of the various campus organizations.

The building is open from 7:00 A.M. to 10:30 P.M. Sunday through Thursday and from 7:00 A.M. to midnight on Friday and Saturday.

PERSONNEL DEPARTMENT

The University Personnel Department was created to provide a variety of personnel programs for the teaching, research, administrative, service, and maintenance units of the University in performing their vital functions. These programs include applicant recruiting, testing and employment of full-time, part-time and student employees; wage and salary administration for all non-academic employees; employee training, and special employee services.

The central Personnel Department is located in Room 108 of the Mineral Industries Building. A branch office is located in the University Hospital on the Medical Center Campus.

The employment office of the central personnel office and the Medical Center branch office are both concerned with University-wide employment opportunities existing on all campuses. Therefore, one application submitted at either convenient office is all that is necessary to be considered for any opportunity existing on any campus of the University.

Student Employment

Students seeking full-time or part-time employment on or off the campus may receive service and assistance from the Personnel Department. All employment opportunities are posted each week on the bulletin boards located on all three campuses. Any student interested in a position which has been listed should go to either personnel office during the regular hours (8:15 A.M. to noon; 1:00 to 5:00 P.M.) and apply for the position. Qualified students will be given a referral introduction to the prospective employers.

SPEECH AND HEARING CLINIC

The Speech and Hearing Clinic, functioning as one of the service and training facilities of the Department of Speech, offers services to University students and residents of the surrounding area in the evaluation and management of speech and hearing disorders.

Speech problems such as stuttering, voice defects, articulatory errors, foreign dialect, and others are examined and therapy is provided if required. Nonmedical tests of hearing and aural rehabilitation services are also available at this clinic.

Appointments for consultations should be requested by telephone or letter.

Student Affairs

Student activities and welfare are under the administration of the Director of Student Affairs. His office is located in Martin Hall, along with the offices of his associate and assistant.

All interests of women students are in the hands of the Dean of Women. Her office and that of her assistant are on the main floor of Elizabeth Moore Hall.

SCHOLARSHIPS

Many individuals and organizations who are friends and benefactors of West Virginia University and its students have established scholarships for deserving students. Additional information concerning these scholarships may be obtained from the Scholarship Coordinator, located in Martin Hall.

STANDARDS OF CONDUCT

A student is expected to show both within and without the University unfailing respect for order, morality, personal honor, and the rights of others. This rule is applicable at all times, in all places, to all students of the University. A student may at any time be removed from the University if his presence is not conducive to the best interests of the University.

The University maintains very stringent standards of honesty in academic work. Students and faculty are committed to the discouragement of cheating in all forms. Uniform procedures for hearing, investigating, handling, and disposing of cheating cases are established throughout the University (see page 26).

All matters of discipline are under the jurisdiction of the Director of Student Affairs and the Committee on Discipline. No student may be expelled without approval of the President of the University.

MARRIAGES

If any student under the age of twenty-one years, who has not been previously married, intends to marry within the school year, he or she must obtain the consent of the parents (or of the parent living; if the parents be living separate and apart, of the one accorded the custody of such person) or guardian before such marriage shall be solemnized, in accordance with the provisions of Section 8, Chapter 48, revised *Code* of West Virginia, 1931.

In order to insure obedience with both the letter and the spirit of this statute and the policy of the University such student, no less than one week before said marriage, must show satisfactory evidence to the Director of Student Affairs that consent of the parents or guardian as required by the statute has been obtained.

In the event that such student fails to do this, regardless of where the marriage ceremony is performed, he or she may be suspended, and may only be reinstated upon showing satisfactory reason to the Council of Administration why he or she failed to comply with this regulation.

Where both parties to the marriage are students and one has not complied with this rule, both may be suspended.

RETURNING BOOKS TO LIBRARY

Students must present a signed statement from the Librarian that they have returned all books and paid all library fines before withdrawing from the University or before graduation.

CAMPUS PARKING REGULATIONS

Students are required to observe all rules and regulations of the University concerning automobile parking. Full information is available from the Information Desk, located in the lobby of the Administration Building.

IDENTIFICATION CARD

An identification card is issued to each full-time student. It entitles the owner to admission to certain University athletic events, various activities of student government, Health Service, and Mountainlair. Confiscation will result from misuse. The University reserves the right to refuse reissuance of an identification card.

LIVING ACCOMMODATIONS

Residence Halls

The University maintains seven residence halls, two for men and five for women. For information as to accommodations and rates, address the Director of Residence Halls.

Room reservations are made for the entire academic year. Students are not released during a semester or at the end of the first semester to live elsewhere.

The following rules are in effect:

Each student who wants a room in one of the halls must file an application with the Department of Residence Halls. The application is sent to the student at the time he is admitted to the University. This form and an advance housing fee of $50.00 must be returned to the Office of Admissions.

No student will be permitted to live in other quarters until after the residence halls are fully occupied. All women students must live either in residence halls, sorority houses, or in houses approved by the Dean of Women.

In assignment of rooms in these buildings all freshmen shall be required to take rooms therein, no freshmen being allowed to live outside the residence halls if there is room in them. In enforcing this rule the following exceptions shall be made:

(1) When the parents or legal guardians of students reside in Morgantown or within commuting distance of the University, these rules shall not apply.

(2) When the home of the student is within such distance that it is entirely practicable for him to live in his home and reach the University by car or otherwise for all his classes, these rules shall not apply.

A student who does not claim exemption for the fall semester to live with parents or guardian cannot claim exemption for the second semester unless the parents in the meantime have moved to Morgantown.

(3) When students above the rank of freshman reside in approved sorority or fraternity houses under the supervision of the Director of Student Affairs and the Dean of Women, these rules shall not apply. (Release from dormitory housing to live in these houses will not be granted after August 1.)

(4) When conditions of employment (such as firemen in various buildings and homes, employment on dairy and experimental farms, etc.) require residence on the premises, these rules shall not apply. Students so employed should not request reservations for resident space. All women students must receive approval of the Dean of Women before arranging to work for room and board.

When space is needed for underclass women, no senior sorority woman will be permitted to live in the halls if there is room for her in her sorority house.

Because of the shortage of residence space for men, rooms are assigned only to students whose homes are in West Virginia.

More detailed information may be found in the Housing Contract and agreement forms for the Residence Halls.

Off-Campus Housing

The Housing Coordinator's office is located at the University Housing Center and will provide information regarding private housing in Morgantown and vicinity. All graduate women students and all men students requiring living accommodations in private dormitories, residences, apartments, or houses may write or call upon the Housing Coordinator for assistance. Private housing off-campus is available at reasonable rates within easy walking distance of the campus. Most of these facilities have been approved to meet essential safety, health, and other desirable environmental conditions of the student. A few private residences are equipped to board students.

University Apartments

The University operates several hundred furnished and unfurnished apartments for married and graduate students, faculty, and staff at reasonable rates. For information write to the Housing Coordinator.

CULTURAL ACTIVITIES

The University, through the Committee on Convocations and Public Exercises, provides appropriate and desirable programs for students. The convocations form the basis of the cultural program, but there are others sponsored by various divisions of the University and community.

Convocations consist of addresses by distinguished speakers and musical and other entertainment features of special merit.

The University Cultural Series presents a special program of outstanding cultural events during each academic year and summer session in drama, music, and the dance.

During the year students can attend their own legitimate theatre in which plays are presented by the Division of Drama. The University Radio Theatre also is an activity of this Division.

The University Symphony Orchestra concerts, individual recitals, operas, and chamber music programs are sponsored by the Division of Music.

Greater West Virginia Weekend makes a number of cultural activities available to students and their visiting parents. A modern dance recital, music recitals, religious services, and educational scientific exhibits are of the highest value.

Each year the annual Festival of the Fine and Lively Arts, sponsored by the Creative Arts Center, attracts much attention. Features of the Festival have included concerts by off-campus musical organizations; art exhibits; works of the theatre; films; dance presentations; chamber music offerings; recitals by faculty and invited artists; concerts by the University Choir, the University-Community Symphony Orchestra, the University Symphonic Band, and off-campus musical organizations. Other Festival attractions include jewelry exhibits, photography showings, swimming pageants, water color exhibits, and other cultural activities.

SOCIAL ACTIVITIES

Student social life in the University is a carefully planned and supervised part of a student's life on campus. It is guided in such a manner as to offer a wholesome type of pleasure without curbing the institution's main purpose—education of the student.

Social life is under the supervision of the University Social Committee. The committee has supervision of every social function given by the University or by an organization within it, including fraternities, sororities, and other student societies.

STUDENT GOVERNMENT

University student government provides for three separate departments of government activity: the Student Legislature, the Student Executive Council, and the Student Court.

The Legislature, composed of elected representatives from all colleges and schools, determines policy and exercises control over all student activities proposed by the Executive Council, the administrative body which includes the president and vice-president of the student body, and the president and vice-president of each class. The Court, composed of seven students, handles constitutional revisions and controversial issues of the Legislature and Executive Council.

Student government sponsors many educational and entertaining activities, and coordinates the work of its committee system and of various campus organizations. Besides providing valuable experience in democratic self-government, student government represents the student body with the faculty, the administration, and with off-campus groups.

PROCEDURAL RULES FOR HANDLING CHEATING CASES

Cheating is condemned at all levels and in all areas of life. Like a crippling malady, it leaves its marks subjectively. Cheating indicates a weakness and inability to meet and face the issues and problems of life. It creates an atmosphere of mistrust, disrespect and insecurity. The effects and influence of cheating will necessarily be reflected in commerce and government and in all of the professions and callings, as well as in the classroom and in the home. Students of the University should act to discourage and eliminate cheating of every kind and character for the moral and mental well-being of themselves and their fellow men. Likewise, the teaching faculty should remove and eliminate every situation which provides avenues and opportunities for cheating, thereby contributing to the inculcation of the principles of honesty, integrity, self-reliance and self-respect of the students. It is ex-

pected that University officials will have little occasion to place in operation the established procedures for handling cheating cases. Through these procedures and by means of a continued awareness, on the part of both the faculty and the students, of the intellectually and morally weakening effects of cheating, a healthy strengthening of the moral fiber of the University community may be envisioned and accomplished.

Cheating may be defined as including:

1. Obtaining help from another student during examination.

2. Knowingly giving help to another student during examination.

3. The use of notes, books, or any other unauthorized sources of information during examination.

4. Obtaining, without authorization, an examination or any parts thereof prior to taking of the examination.

5. Submitting a report, notebook, speech, outline, theme, or other problem for credit that has been knowingly obtained or copied in whole or in part from another individual's academic composition, compilation or other product.

6. Submitting or participating in the submission of a report or examination paper falsely represented as being the result of the original efforts of the submitting student.

7. Altering the record of any grade in any gradebook, office, or other record.

8. Any other type of misconduct, offense, or manifestation of dishonesty or unfairness in or relating to the academic work.

The deans of the several colleges and schools shall have the authority and shall be responsible for the handling of cheating cases arising or occurring within their respective colleges and schools.

Each member of the teaching faculty and all other University employees, including but not limited to assistants, proctors, office personnel, janitors and night watchmen, shall promptly report, via the department chairman or immediate superior, if any, each known case of cheating, as hereinbefore defined, to the dean of the college or school concerned.

Each case of cheating shall be handled with dispatch, and the dean shall promptly report thereon in writing to the President and shall at the same time place a copy of such report in the permanent record of the student concerned and forward another copy thereof to the Director of Student Affairs for his permanent records. In all cheating cases involving women students, an additional copy of such report shall be forwarded to the Dean of Women. The report shall include a brief statement covering the facts and circumstances of the case and the discipline applied or recommended.

In cases wherein cheating occurs in a college or school other than that in which the student is registered, the minimum penalty, as prescribed in the paragraph below, shall be applied by the dean of the college or school in which the cheating occurred. In handling such cases the dean shall follow the procedure in the above paragraph and then immediately refer the case, by transmittal of a copy of the report thereon as prescribed in the above paragraph, to the dean of the college or school in which the student involved is registered. The purpose of this copy of the report is for information and for imposition or recommendation of such further discipline or penalty as may be warranted. Upon completion of his review of and action on the case, the dean of the college or school in which the student is registered shall thereupon compose his independent written report on the case and transmit same to the President and otherwise distribute copies thereof as provided in the above paragraph.

The deans and their respective teaching faculties shall take remedial and preventive steps to remove every opportunity for any situation conducive to cheating. Particular attention shall be given to the maintenance of a high level of proctoring in those colleges, schools and departments wherein proctoring is employed and to security against student access to or knowledge of examination and test materials prior to the time of the intended use thereof for student examination and testing purposes. The deans shall exercise their independent discretion as to methods and means of accomplishing these ends and may employ thereof faculty meetings, written instructions, or other effective devices and measures.

The *minimum* penalty for all cases of cheating shall be dismissal from the course and the establishment of a grade of "Failure" in the course, as of the date of cheating, *unless in the opinion of the dean there are extenuating circumstances which might indicate the advisability of a lesser penalty.*

For a second or subsequent cheating offense, in addition to failure in the course, suspension or expulsion of the student shall be recommended by the dean for the President's action. The office of the Director of Student Affairs shall maintain its records of reports in cheating cases so as to detect and ascertain promptly and accurately the occurrence of second or subsequent cheating offenses and, upon inquiry by the dean, shall promptly advise whether the student has been guilty of any prior cheating offense or offenses.

Suspension or expulsion of a student guilty of cheating may, in first offense cases, be recommended by the dean to the President if the facts and circumstances of the case so warrant or the rules, regulations or policy of the college or school concerned so require.

In cheating cases involving criminal offenses, such as theft of examination or test materials, alteration of records, breaking or entering buildings, offices, desks, safes, or filing cabinets, damage to public property and other like or similar misconduct, the academic penalties and discipline as herein prescribed shall be applied and in addition thereto the dean of the college or school concerned shall with the approval of the President, cause the facts of each case to be presented to the Prosecuting Attorney of Monongalia County, West Virginia, for his further investigation and for prosecution by injunction or otherwise as may be warranted. Upon the issuance of a warrant for or the return of an indictment against a student on account of any such offense, the President shall suspend such student from the University pending final prosecution thereon. If the student be acquitted of the offense, his suspension may be vacated, but if convicted of the offense, he shall be expelled from the University.

A student may appeal from the decision or action of a dean in a cheating case to the President for review and reconsideration and the President may thereupon affirm or reverse, in whole or in part, the decision or action of the dean.

In his action on any cheating case, whether on appeal by a student or on recommendation or reference by a dean, the President may consider the case record before him, may further investigate or cause to be investigated the facts and circumstances of the case, and may act personally thereon and dispose thereof, or he may, in his discretion, refer the case to another appropriate University office, committee or agency for review, investigation, consideration and recommendation prior to his final action thereon and disposition thereof.

It is recommended that, in all phases of cheating cases, care and caution be observed so as to avoid accusation or charge of cheating or related impropriety which may be without foundation. A false accusation may have serious implications and result in reflection on or harm to an innocent and unoffending student and discredit to the faculty.

Student Organizations

ELIGIBILITY

To be eligible to represent the University in public appearances, a student must be enrolled in the University and must meet the eligibility requirements of the department or school in which the activity originates. The records of those students whose status is questionable should be checked at the Registrar's Office before participation is permitted. This checking should be done by the department or school in question.

To hold an elective or appointive office in a duly recognized student organization a student must be enrolled in the University for at least 12 semester hours; and if in other than his or her first semester in residence, must have maintained a minimum cumulative average of "C" as reported by the Registrar's Office, at the time of election or appointment. After completion of his or her first semester in the University no person shall be pledged to either a social fraternity or sorority unless he or she has attained a cumulative average of "C" as reported by the Registrar's Office at the time of pledging.

Following is a brief listing of all recognized student organizations. Specific details concerning description and membership requirements can be found in *Notes for New Mountaineers* and where applicable in the sections of this bulletin of the schools or colleges concerned.

ACADEMIC AND SERVICE HONOR SOCIETIES

Alpha Epsilon Delta (Pre-medical)
Alpha Pi Mu (Industrial Engineering)
Alpha Zeta (Agriculture)
Arnold Air Society (Air Force ROTC)
Beta Gamma Sigma (Business Adm.)
Chi Epsilon (Civil Engineering)
Chimes (Junior women)
Eta Kappa Nu (Electrical Engineering)
Gamma Sigma Delta (Agriculture)
Helvetia (Sophomore men)
Kappa Delta Pi (Education)
Kappa Tau Alpha (Journalism)
Li-Toon-Awa (Sophomore women)
Mortar Board (Highest women's honorary)
Mountain (Highest men's honorary)
Omicron Nu (Home Economics)
Order of the Coif (Law)
Order of the Grail (Jr. men's honorary)
Pershing Rifles (Military)
Phi Beta Kappa (Arts and Sciences)
Phi Delta Kappa (Education men)
Phi Delta Phi (French)
Phi Epsilon Phi (Botany)
Phi Lambda Upsilon (Chemistry)
Pi Tau Sigma (Mechanical Engineering)
Psi Chi (Psychology)
Rho Chi (Pharmaceutics)
Scabbard and Blade (Army ROTC)
Sigma Delta Pi (Spanish)
Sigma Delta Psi (Men's sport honorary)
Sigma Gamma Epsilon (Earth Sciences)
Sigma Gamma Tau (Aeronautical Eng'g.)
Sigma Pi Sigma (Physics)
Sigma Tau Sigma (Tutoring honorary)
Sigma Xi (Scientific research)
Sphinx (Senior men)
Spokes (Women's service group)
Tau Beta Pi (Engineering)
Xi Sigma Pi (Forestry)

PROFESSIONAL HONOR FRATERNITIES

Alpha Delta Sigma (Advertising)
Alpha Delta Theta (Medical Technology)
Alpha Tau Alpha (Agricultural Educ.)
Beta Alpha Psi (Accounting)
Delta Sigma Delta (Dentistry)
Kappa Psi (Pharmacy)
Lambda Kappa Sigma (Pharmacy women)
Phi Alpha Delta (Law)
Phi Beta Pi (Medicine)
Phi Chi (Medicine)
Phi Delta Phi (Law)
Psi Omega (Dentistry)
Theta Sigma Phi (Journalism women)
Xi Psi Phi (Dentistry)

PROFESSIONAL HONOR SOCIETIES

Delta Sigma Rho-Tau Kappa Alpha (Forensics)
Mu Phi Epsilon (Music women)
Omega Chi Epsilon (Chemical Eng'g.)
Omicron Kappa Upsilon (Dentistry)
Phi Alpha Theta (History)
Phi Mu Alpha (Music men)
Phi Upsilon Omicron (Home Economics)
Pi Sigma Alpha (Political Science)
Pi Epsilon Tau (Petroleum Eng'g.)
Alpha Eta (Speech and Hearing)
Sigma Delta Chi (Journalism men)

NATIONAL AND LOCAL STUDENT GROUPS

The Art Society
Advanced Cadet Club
Agriclub
All Campus Party
Alpha Phi Omega
American Association of University Veterans
American Chemical Society
American Institute of Chemical Engineers
American Institute of Industrial Engineers
American Institute of Mining, Metallurgical and Petroleum Engineers
American Pharmaceutical Association
American Society of Agricultural Engineers
American Society of Civil Engineers
American Society of Mechanical Engineers
Angel Flight
Associated Women Students
Block and Bridle Club

Boreman Hall Council
Campus Ecumenical Council
Cosmopolitan Club
Dairy Science Club
Dolphin
Fi Batar Cappar
Forestry Club
Future Farmers of America (Local Group)
Hillel Foundation
Home Economics Club
Il Circolo Italiano
Institute of Electrical and Electronics Engineers
Interfraternity Chaplains Council
Interfraternity Council
Inter-Varsity Christian Fellowship
Kappa Phi (Methodist Women Hon.)
Mathematics Club
Mountaineer Rifle Club
Music Educators' National Association
Newman Club
Orchesis
Panhellenic Council
Phi Sigma Tau (Philosophy)
Physical Education Majors' Club (women)
Russian Circle Club
Sigma Delta
Sigma Theta Epsilon
Student Government
Student Party
University 4-H Club
University Marketing Club
Varsity Club
WVU Amateur Radio Club
WVU Industrial Arts Club
WVU Professional Recreation Society
WVU Student Education Association
WVU Society of Mining Engineers
Young Democrats
Young Republicans
Y.W.C.A.

ASSOCIATED WOMEN STUDENTS

All women students are members of Associated Women Students. The purposes of this association are: (1) to regulate all matters pertaining to the student life of its members; (2) to further in every way a spirit of friendliness and unity among the women of the University; (3) to increase their sense of responsibility; and (4) to be a medium for maintaining high scholastic and social standards.

Responsibility for directing the work of the Association rests with the Executive Council, composed of the following members: a president, two vice-presidents, a secretary, a treasurer, and a representative from each class. The officers are elected annually. To be eligible for membership on the Executive Council, a woman must have no less than a "C" average in all her class work.

In 1921, the Association was admitted to active membership in the Intercollegiate Association of Women Students.

SOCIAL ORGANIZATIONS

Fraternities

Alpha Gamma Rho, Alpha Phi Delta, Beta Theta Pi, Delta Tau Delta, Kappa Alpha, Kappa Sigma, Lambda Chi Alpha, Phi Delta Theta, Phi Kappa Psi, Phi Kappa Sigma, Phi Sigma Delta, Phi Sigma Kappa, Pi Kappa Alpha, Sigma Chi, Sigma Nu, Sigma Phi Epsilon, Tau Kappa Epsilon, Theta Chi.

Sororities

Alpha Delta Pi, Alpha Phi, Alpha Xi Delta, Chi Omega, Delta Delta Delta, Delta Gamma, Gamma Phi Beta, Kappa Delta, Kappa Kappa Gamma, Pi Beta Phi, Sigma Delta (local).

Fraternity Advisers

Alpha Gamma Rho, Prof. Robert V. Kerwood; Alpha Phi Delta, Michael A. Caruso; Beta Theta Pi, Dr. E. W. Crooks; Delta Tau Delta, Dr. John R. Williams; Kappa Alpha, Dr. Donald E. Hayhurst; Kappa Sigma, Dr. Alan C. Donaldson; Phi Delta Theta, Dr. John B. Harley; Phi Kappa Psi; Phi Kappa Sigma, Prof. Ralph M. White; Phi Sigma Delta, Dr. Victor J. Lemke; Phi Sigma Kappa, A. Bernard Stenger; Pi Kappa Alpha, Dr. Jesse F. Clovis; Sigma Nu; Sigma Phi Epsilon, Stanley Farr; Tau Kappa Epsilon, Kenneth W. Shaffer; and Theta Chi, Capt. John C. Kite.

Chairmen of Alumnae Advisory Committees

Alpha Delta Pi, Miss Betty Miller; Alpha Phi, Mrs. Joseph Gluck; Alpha Xi Delta, Mrs. Robert Fleming, Jr.; Chi Omega, Mrs. Stanley Cox; Delta Delta Delta, Mrs. Clark Sleeth; Delta Gamma, Mrs. Robert Conner; Gamma Phi Beta, Mrs. Benjamin Stout, Jr.; Kappa Delta, Mrs. Ernest Nesius; Kappa Kappa Gamma, Mrs. Jay Johnson; Phi Beta Phi, Mrs. Ward Stone; and Sigma Delta, Mrs. Laurence DeLynn.

Sorority Supervision

Supervision of all sororities is vested in the Dean of Women's office.

Religious Foundations and Associations

Various State and National church boards have established foundations at the University for the religious education and nurture of students. The churches of Morgantown extend a warm welcome to students of all faiths. The physical plant and equipment of each church is available for social, educational, and recreational activities of students.

Baptist

The Baptist Student Movement at the University is located in the Student Center of the First Baptist Church, 432 High Street. It is sponsored by the American Baptist Convention, and the local church. The B.S.M. includes the Baptist Student Fellowship and the Married Student Fellowship. Their programs encompass church school classes, worship services, evening fellowships, and many other activities. The responsibility for these programs lie with the students and the pastor to students.

Catholic

Newman Hall, 1481 University Avenue, is the social and religious center established by the West Virginia Diocese of the Roman Catholic Church for students of that and other faiths. Newman Hall is a beautiful building of English collegiate architecture immediately adjacent to the campus. It includes a chapel, dining room, lounge, game room, and library. The Paulist fathers are the resident chaplains.

Christian

The *Disciple Student Foundation* provides a program for Christian Church students attending the University. The Foundation is sponsored by the Department of Religious Education of the United Christian Missionary Society at Indianapolis, Ind., the Christian Churches of West Virginia and the First Christian Church at Morgantown. These three agencies function through a Student Work Advisory Committee. The First Christian Church is the center for Foundation activities and is located at Grand Street and Cobun Avenue.

Episcopal

Trinity Church, at Spruce and Willey streets, is the center for student work sponsored by the Diocese of West Virginia of the Protestant Episcopal Church. This work is under the direction of the rector and the assistant rector. The program includes student worship services and meetings of the Canterbury Club, a chapter of the National Association of Canterbury Clubs, for discussion and fellowship. Canterbury Club meets in Strider Hall, located on the ground floor of Trinity Church.

Greek Orthodox

The *Greek Orthodox Youth of America* conducts student activities at 447 Spruce Street.

Jewish

The Hillel Foundation at the University, 1420 University Avenue, represents the combined efforts of the West Virginia B'nai B'rith Lodges and of the National B'nai B'rith Hillel Foundation to bring the University's students together in religious, cultural, and social activities. Prominent lecturers and speakers are featured at regular intervals by the Foundation for the members of the group and for the general student body.

Lutheran

St. Paul Lutheran Church is the center of Lutheran student activities sponsored by the Student Service Commission of the National Lutheran Council, the Synod of West Virginia, and St. Paul Lutheran Church. The work is under the direction of the local pastor. The program includes regular services of the church and activities of the Lutheran Student Association.

Methodist

Wesley Foundation at West Virginia University is housed in Wesley Methodist Church at 503 High Street and provides a worship and activities center for Methodist students in the University. Facilities are provided for worship, religious education, and fellowship. The students plan and execute the program of education, worship, fellowship, community service, settlement house missions, and other activities. Kappa Phi, Methodist women's club, and Sigma Theta Epsilon, Methodist men's fraternity, are sponsored by the Foundation.

Presbyterian

The *Westminster Foundation* of West Virginia represents the cooperative efforts of the Boards of Christian Education and National Missions of the Presbyterian Church, U.S.A., the Synod of West Virginia of the Presbyterian Church, U.S., and the Presbytery of Winchester, to make the Christian religion a vital factor in the experiences of students and in the relationships which these students sustain while in the University; and also through guided Christian activities in the mine-camp communities surrounding Morgantown, to train among educated men and women future Christian statesmen. The work is under the direction of the student pastor.

United Brethren

The Student Youth Fellowship of the *Evangelical United Brethren Church* conducts student activities at the Church on Burroughs Street in The Flatts. The work is under the direction of the local pastor.

Y.W.C.A.

The *Young Women's Christian Association* is a nonsectarian fellowship of women of the University organized for the purpose of promoting and directing widely varied activities through a religious motive.

Student officers, student cabinets, boards composed of students, faculty, and townspeople, and an executive secretary direct the activities of the Y.W.C.A. The various committees, interest groups, and commissions provide not only their immediate ends, but also opportunity for fellowship and leadership training.

Other Churches

Other churches, while not having special buildings or workers for University students, make definite contributions in ministering to the religious and social needs of students who belong to their particular faiths. College students are welcome in all the churches regardless of their church affiliations. A complete list of churches and services will be found in the bulletin *Notes for New Mountaineers.*

Part II

Admissions, Fees, Registration, And Regulations

Admissions

ADMISSION FROM SECONDARY SCHOOLS

Students may be admitted to the University on the basis of examination or transcripts from accredited high schools. High school graduates are required to present credit for 4 units of English and 1 unit of algebra. In addition, agriculture, chemistry, forestry, geology, mathematics, physics, and the health sciences require 1 unit of geometry. Engineering and mining majors are required to present 2 units of algebra, 1 unit of geometry and ½ unit of trigonometry, or its equivalent. Students who do not meet these requirements in mathematics may apply for admission to the pre-engineering curriculum.

All students entering as first-term freshmen are required to take the American College Testing Program tests (ACT) and have the report of scores sent to the University.

It is recommended that students deficient either in mathematics or English (on the basis of high school record or ACT scores) attend the Summer Session of the University to make up these deficiencies. Students admitted conditionally must make up all deficiencies before they can be classified as sophomores.

Students from West Virginia high schools should obtain applications for admission from their high schools. Out-of-state students may write the Office of Admissions and request an application form. Applicants should prepare their part of the application and then return it to the secondary school. The schools will then send the completed application and a transcript of high school grades directly to the Office of Admissions. Applications and transcripts must be received by the University at least three weeks in advance of registration.

Students should not apply for admission until they have met the requirements as outlined in the application form. Students are either fully admitted or they are rejected on the basis of the evidence available at the time. The University does not hold applications for further grades, but applications are returned to the secondary schools and they should be resubmitted when the students are eligible for admission to the University. There is no advantage to the students submitting an application before the admission requirements are met.

West Virginia University encourages students to work to their capacity and to advance as rapidly as appropriate in their academic work. Therefore, qualified juniors and seniors who take college level subjects offered in their schools in cooperation with the CEEB Advanced Placement Program should take the appropriate three-hour examinations administered by the Advanced Placement Service and have the scores and tests sent to West Virginia University. Credit for corresponding West Virginia University courses is automatically given for high achievement in these tests.

Students may also petition departments to take placement examinations covering courses offered at West Virginia University. Credit or advanced placement is given for satisfactory completion of these tests.

ADMISSION OF TRANSFER STUDENTS

Applicants for transfer from another college or university should submit the following to the Office of Admissions:

(1). A completed application for undergraduate admission.
(2). A certified transcript of all college work taken to date, including a statement of good standing. A certified statement covering subjects subsequently taken should be sent as soon as it is available.

(3). Catalog pages describing all subjects which have or will have been completed; the applicant's name should be written on each page and each subject indicated by a check mark in the margin. Complete catalogs should not be sent. (Not necessary from West Virginia colleges.)

Transfer students are expected to present an average based on all work attempted at other institutions of higher education equivalent to a "C" (2.0) or higher. Credit is transferable only in courses carrying a grade of "C" or higher.

Students desiring to transfer into the College of Engineering or School of Mines must also have a "C" (2.0) average or higher for all college-level mathematics courses.

All applications and transcripts must be received at least three weeks in advance of registration.

Credit accepted from accredited Junior Colleges is limited to 72 semester hours, and credit will be allowed for lower-division courses only.

ADMISSION OF SPECIAL STUDENTS

Persons not desiring to become candidates for a degree may, by special permission, be admitted as special students. Such students are subject in all respects to the usual rules relating to registration and scholarship. Admission to any class is subject to the approval of the instructor in charge.

ADMISSION OF FOREIGN STUDENTS

Foreign citizens applying for undergraduate entrance must have their completed application available for review at least four months prior to the date of enrollment. Decisions about admissions cannot be made until complete records have been received. Inquiries and applications should be addressed to the Office of Admissions.

Students applying as undergraduates should have completed the equivalent of a secondary education and ranked higher than average in their class.

Preliminary applications, prepared by the Institute of International Education, are available at United States Consulates and United States Information Agency offices. Students with a native language other than English are required to take the "Test of English as a Foreign Language." Applications for the test should be addressed to: TOEFL, Educational Testing Service, Princeton, New Jersey.

Information is available at the above named offices.

Foreign students should make all arrangements for their financial obligations to West Virginia University and for their entire stay in the United States before leaving their countries.

ADVANCED STANDING EXAMINATION

Application for advanced standing on work of college grade for which college credit cannot be established on the basis of official transcript of record should be made to the Registrar of the University. Upon payment of the proper fee the Registrar will issue an examination permit. After examination, the department will report to the Registrar of the University courses, if any, for which the applicant is entitled to credit.

VETERANS

The University recognizes that men and women from the Armed Forces who enter college require individual and personalized guidance in order to facilitate their entrance and to aid their adjustment to University life. The Veterans Coordinator is available for consultation and help in the solution of personal problems which may arise in the transition to civilian student life.

Information regarding educational opportunities made possible at the University through provisions of the Vocational Rehabilitation Program of the Veterans Administration (Public Law 16), and the War Orphan's Educational Assistance

Act of 1956 (Public Law 634) may be obtained from the Veterans Coordinator by personal conference or by mail. An amendment to Public Law 634, passed by Congress in the summer of 1964, provides benefits to many dependents of 100 per cent disabled veterans.

An honorably discharged veteran of the armed forces of the United States with a minimum of one year active duty shall be exempted from any additional work in Basic Military and the Physical Education general program on submission of due proof thereof to the Registrar. Students with six months but less than one year of service are exempted from taking the first year of Basic Military. Scholastic hours credit will be allowed for military training for which a student is exempted.

THE COLLEGE OF COMMERCE

Applicants seeking admission to the College of Commerce for the purpose of obtaining a degree must have earned at least 58 semester hours of required and approved elective courses in the Pre-Commerce curriculum at a grade average of not less than "C." No student will be admitted who has not completed Economics 51 and 52 and Accounting 51. Freshmen and sophomores are enrolled as Pre-Commerce students in the College of Arts and Sciences where their programs of study will be directed by Pre-Commerce advisers.

THE CREATIVE ARTS CENTER (Music—Art—Drama)

Placement tests and auditions or a portfolio of the student's art work may be requested for admission to the Creative Arts Center.

Students transferring to the Creative Arts Center from other colleges and schools will be required to present a minimum grade-point average of 2.0. Exceptions may be made in the case of first-semester freshmen.

Advanced standing in the Division of Music in Applied Music and Music Theory is given only by examination.

THE SCHOOL OF DENTISTRY

Applicants for admission to the School of Dentistry should write to the Assistant Registrar, Medical Center, West Virginia University, who will furnish official blanks upon which formal application must be made.

A $10.00 application fee is required and must accompany the application.

Applicants must present evidence of having completed successfully two full academic years (60 semester or 90 quarter hours) of work in the liberal arts in an accredited college based on the completion of the prescribed four-year high school course. All science courses shall include both lecture and laboratory instruction. The college courses shall include not less than 6 semester hours credit each in English composition and rhetoric, in biology (preferably zoology), in physics, in inorganic chemistry, and in organic chemistry.

A dental aptitude testing program is sponsored by the Council on Dental Education of the American Dental Association and approved by the American Association of Dental Schools. Applicants for admission to the School of Dentistry are required to take the aptitude tests and to submit the resulting scores. These scores will be considered as a factor in the selection of students. The tests may be taken in any one of the dental schools, or any one of the testing centers set up in colleges and universities throughout the United States. Information concerning the places, and the dates on which the tests will be given, may be obtained from the Secretary of the Council on Dental Education, c/o American Dental Association, 222 East Superior Street, Chicago 11, Illinois.

A personal interview with the Committee on Admissions is required. Interviews will be at the Medical Center, West Virginia University, and will be arranged as far as possible, to suit the convenience of the applicant.

Good physical and mental health are essential for the successful study and practice of dentistry. Good eyesight is particularly important. The applicant who is admitted to the School of Dentistry must present on or before the day of enroll-

ment, a certificate from the examining doctor stating the condition of his eyes, and if any correctible defects in vision exist he shall present evidence that proper corrections have been made.

A deposit fee of $50.00 for residents and $100 for non-residents is required when the applicant accepts offer of admission. This amount will be applied as part-payment of the tuition fee when the applicant registers for the first semester. The deposit will be forfeited if the applicant fails to register.

Division of Dental Hygiene. The dental hygiene program is a division of the School of Dentistry. Its curriculum offers a four-year degree program for dental hygienists. Upon the fulfillment of all prescribed requirements and with the recommendation of the School of Dentistry, the candidate shall be awarded the degree, Bachelor of Science in Dental Hygiene. The general admission policies established by West Virginia University shall be met. The applicant must be a graduate of an accredited high school or preparatory school which is acceptable for college entrance. One unit in both algebra and plane geometry will be necessary for admission. The Dental Hygiene Aptitude Test will be required of every applicant.

Further details concerning requirements of the School of Dentistry may be obtained by writing to the Assistant Registrar, Medical Center, or Miss Pauline F. Steele, Director of Dental Hygiene, Medical Center.

Complete information concerning the School of Dentistry may be found in the 1965-66 *Announcements* of the Medical Center.

THE COLLEGE OF EDUCATION*

Requirements for admission to the College of Education shall be the completion of 58 semester hours of approved college work, with an average of at least 2 grade points per credit hour on all work attempted. Candidates for a Bachelor's Degree in Education register for their first two years of work in the College of Arts and Sciences. Freshmen and sophomores who expect to enter the College of Education will indicate their intention when they register. Their studies will be directed by advisers for pre-education students. Such students should so arrange their courses of study so as to satisfy requirements for junior standing and should be fulfilling requirements for the certification of teachers.

THE COLLEGE OF ENGINEERING AND THE SCHOOL OF MINES

For admission to the College of Engineering or the School of Mines, prospective students must be qualified for admission to the University, present credit for 2 units of algebra and 1 unit of geometry (1 unit plane geometry or 1 unit integrated geometry or ½ unit plane geometry and ½ unit solid geometry) and ½ unit of trigonometry. Students who do not meet these requirements in mathematics may apply for admission to the pre-engineering or the pre-mines course in the College of Arts and Sciences.

It is highly recommended that prospective students take the American College Test (ACT) in the spring preceding their admission to the College of Engineering or School of Mines. Based upon these test results, it is further recommended that those students who require an additional background in mathematics or English attend the summer session of the University, enrolling in courses such as Math. 3 (College Algebra), Math. 4 (Plane Trigonometry), and English 0. Completion of these courses will permit the student to enter the regularly scheduled engineering program at the beginning of the fall semester.

*Effective September, 1967, the following will be required for admission to the Undergraduate Programs in the College of Education:

1. A grade-point average of 2.25 on all work attempted.
2. A grade-point average of 2.25 on all work attempted for enrollment in the student teaching block.
3. For registration in professional education courses beyond Ed. 106, students must complete requirements for Ed. 100.

Students desiring to transfer from another college, school or university into the College of Engineering or the School of Mines must meet the following requirements:

(A). Have a grade-point average of 2.0 or higher for all college level courses (English 0, Math. 0, 1, 2, and 7 count for entrance only).

(B.) Have a grade-point average of 2.0 or higher for all mathematics courses excluding only Math. 0 and 1.

THE SCHOOL OF JOURNALISM

A candidate seeking admission to the School of Journalism for the purpose of obtaining a degree must have satisfied requirements for admission to one of the University undergraduate colleges and must have earned at least 58 semester hours of college credit. A student deficient in the physical education service program and military science will be required to take these subjects as soon as possible. During his freshman and sophomore years he should have completed satisfactorily all or most courses specified for prejournalism majors. A prejournalism student not maintaining at least a "C" average during his first two years in all college subjects must apply directly to the School of Journalism Committee on Scholarship for admission to the School.

THE SCHOOL OF MEDICINE

Applicants for admission to the School of Medicine should write to the Assistant Registrar, Medical Center, West Virginia University, who will furnish official blanks upon which formal application must be made.

A $10.00 application fee is required and must accompany the application.

The requirements outlined below may be met in either of two ways: first and preferably, by pursuing a course of study leading toward a Bachelor's Degree with major and minor fields of the applicant's own choosing; or secondly, by following a more rigidly prescribed curriculum generally offered as a "Premedical" curriculum. In either case, the applicant must have completed satisfactorily the minimum requirements listed below:

English Composition and Rhetoric	1 year
Zoology or Biology (with laboratory)	1 year
Inorganic Chemistry (with laboratory)	1 year
Organic Chemistry (with laboratory)	1 year
Physics (with laboratory)	1 year
Social Studies	1 year

A total of 90 semester hours of work, exclusive of military science or aerospace studies and physical education, is required.

The number of students the School of Medicine can accommodate is strictly limited. Applications for admission are considered by the Committee on Admission of the School of Medicine, which selects those with the highest qualifications of scholarship and personal fitness. An important factor is the score of the applicant in the Medical College Admission Test sponsored by the Association of American Medical Colleges and given at suitable times. Students should consult premedical advisers about this test or should write to The Psychological Corporation, 304 East 45th St., New York, New York, 10017. Applications for admission may be made as much as a year in advance of the opening date.

Each applicant is required to deposit $50.00 before his name is entered upon the official list of those accepted to the School of Medicine. If the applicant enrolls, this sum is applied to the tuition of the first semester. If the application is withdrawn after the applicant has been offered a place and has made a deposit, such deposit may be refunded at any time prior to January 15 of the year in which enrollment is anticipated.

Complete information concerning the School of Medicine may be found in the 1965-66 *Announcements* of the Medical Center.

Medical Technology

(A). Admission requirements for the first year (pre-medical technology) are those for the College of Arts and Sciences, namely 15 units of high school work in-

cluding subjects specified in the requirements of the College of Arts and Sciences. One unit of algebra and one unit of plane geometry are required; chemistry and physics are very desirable.

(B). Admission to the third year (Medical Technology I) is based upon two years of college work with a total of 64 hours, exclusive of military science or aerospace studies, as follows:

English. 6 hours. (Composition and rhetoric.)

Biological Science. 8 hours. (General Zoology or General Biology.)

Chemistry. 15-16 hours. (Inorganic Chemistry, 8 hours; Quantitative Analysis, 3-4 hours; Organic Chemistry, 4 hours.) [Transfer students are required to have a complete course in organic chemistry to include aliphatic and aromatic compounds.]

Physics. 8 hours.

Physical Education. 4 hours for women. 2 hours for men. (University requirements for students taking first two years in residence.)

Algebra. 3 hours. (For the classes entering September 1964, and later, Math. 3 is required.)

Electives to complete the required hours and to meet Core Curriculum requirements. Courses such as bacteriology, parasitology, and anatomy should not be taken until after the completion of the sophomore year. A foreign language is recommended for students who plan to do graduate work.

THE SCHOOL OF NURSING

Application for admission to the School of Nursing should be made to the Dean of the School on or about December 1 of the college freshman year. Forms are available at the Office of the Dean, School of Nursing.

A candidate for nursing should have good physical and mental health as well as those personal qualifications appropriate to a professional person. The School of Nursing, through its Admissions Committee, admits students who by reason of personal and intellectual qualities show promise of benefiting from the program and of contributing to the field of nursing. All candidates are required to have personal interviews with a member of the faculty prior to acceptance. Factors influencing decision of the Admissions Committee are: academic record, motivation for academic nursing, health, personal qualities, and social adjustment. Applicants who present the highest overall qualifications are selected for admission.

Freshman students interested in applying for admission to the School of Nursing should register for Nursing 3, Orientation to Nursing, and Nursing 4, Orientation to Nursing, during their freshman year.

Complete information concerning the School of Nursing may be found in the 1965-66 *Announcements* of the Medical Center.

Nursing Transfer Students

A student enrolled in any other accredited college or university is eligible for admission with credit if she presents a grade-point average of 2.0 or better, based on all work attempted at previous institutions. Course work must be comparable to first-year requirements in this curriculum except for courses in Orientation to Nursing. Because of the design of this curriculum, a transfer student must complete a minimum of three years and a summer session in the School of Nursing regardless of previous college credit.

Application for transfer should be initiated by February 1 in order to allow time for evaluation and processing of credentials.

Registered Nurse students who wish to complete requirements for the baccalaureate degree are admitted as special students. Inquiries should be directed to the Assistant Registrar, Medical Center.

THE SCHOOL OF PHARMACY

The professional curriculum of the School of Pharmacy is based on two years of pre-pharmacy requirements. The pre-pharmacy requirements are as follows:

Algebra	3 hr.	Chemistry, Organic	8 hr.
Trigonometry	3 hr.	Physics	8 hr.
English Composition	6 hr.	Electives from	
Principles of Economics	6 hr.	Core Group A	12 hr.
Chemistry, General	8 hr.	Core Group B	6 hr.
Biology, General	8 hr.		
		TOTAL	68 hr.

Group A (At least two subjects): Art; Music; Foreign languages and literature, including Latin and Greek (above the elementary level); Literature of the English language; Philosophy.

Group B: History; Psychology; Political Science; Sociology.

Students required to take Military Science or Aerospace Studies will be exempt from an equivalent number of hours of electives in Core Groups A and B. A "C" average is considered the minimum standard for admission.

For admission to the School of Pharmacy, formal application should be made to the Admissions Committee of the School as early as possible after February 1 but before August 1, preceding the fall term in which the student is seeking enrollment.

Applicants for admission to the School of Pharmacy should write to the Assistant Registrar, Medical Center, West Virginia University, who will furnish official blanks upon which formal applications must be made.

A $10.00 application fee is required and must accompany the application.

Each applicant is required to deposit $50.00 before his name is entered upon the official list of those accepted to the School of Pharmacy. If the applicant enrolls, this sum is applied to the tuition of the first semester. If the applicant fails to enroll, this deposit fee is forfeited by the applicant.

Complete information may be obtained from the Dean of the School of Pharmacy or from the Office of the Assistant Registrar, Medical Center.

Further details concerning the School of Pharmacy are contained in the 1965-66 *Announcements* of the Medical Center.

Fees and Expenses

All University fees are subject to change without notice.

All fees are due and payable at the Comptroller's desk in the Field House Annex (South) on the days of registration. Students must pay fees before registration is accepted and class tickets are released. Completion of arrangements for payment from University payroll checks, officially accepted scholarships, loan funds, grants or contracts shall be considered sufficient for acceptance of registration. Fees paid after regular registration must be paid at the Comptroller's office in the Administration Building. Any student failing to complete registration on regular registration days is subject to the late registration fee of $10.00. Students registering pay the fees shown on page 42, plus special fees and deposits as required.

The second Saturday following the beginning of General Registration for a semester is the end of the first refund period. The second Saturday following the beginning of General Registration for the summer session is the end of the refund period.

By order of the Board of Governors, no degree will be conferred upon any candidate prior to payment of all tuition, fees, and other indebtedness to any unit of the University.

SERVICE CHARGE ON RETURNED CHECKS

A service charge of 5 per cent of the amount of each check returned unpaid by the bank upon which it is drawn shall be collected unless the student can obtain an admission of error from the bank.

If the check returned by the bank was in payment of University and registration fees, the Comptroller's office shall declare the fees unpaid and registration cancelled if the check has not been redeemed within three days from date of written notice. In such a case the student may be reinstated upon redemption of the check, payment of the 5 per cent service charge, and payment of a late registration fee of $10.00.

SPECIAL FEES

Late-registration Fee (non-refundable)[1]	$ 10.00
Graduation Fee[2]	10.00
Professional Engineering Degree (including $10 graduation fee)	25.00
Student's Record Fee[3]	1.00
Certificate in Home Economics	2.00
Associate in Arts Degree	2.00
Special extra fee for Flight Training:	
A.E. 171	100.00
A.E. 172	100.00
A.E. 173	100.00
A.E. 181	100.00
A.E. 182	200.00
Fee for change in registration (after 8th day)	1.00
Fee for examination for entrance credit, per unit	1.00
Fee for examination for advanced standing	3.00
Fee for General Educational Development tests (high-school level)[4]	15.00
Certificate of Advanced Study in Education	2.00
Fee for reinstatement of students dropped from the rolls	3.00
Fee for examination of candidates for graduate degree[5]	1.00
Diploma Replacement Fee	5.00
Physical Education Student Fee	5.00
Student Identification Card Replacement Fee	1.00
Correspondence Course in Guided Reading (per course)	1.00
Driver Education Laboratory Fee	20.00
Labor Education Service (for informal activities)	2.00-10.00
Social Work Field Instruction Fee (per year)	75.00

Laboratory Fees

Consult departmental sections of this *Catalog* for information concerning non-refundable laboratory fees, deposits, and microscope rental fee. (See Biology, Botany, and Zoology, page 138; Chemistry, page 144; Geology, page 166; Home Economics, page 171; Psychology, page 194.)

FEE FOR EXTENSION WORK

A fee of $12.00 per semester hour is charged for each extension course.

FEES FOR UNDERGRADUATE AND GRADUATE MUSIC STUDENTS

Full-time

1. Resident Students ..... $115.75 per semester
2. Non-resident Students ..... $380.75 per semester

[1]This fee is not charged to full-time students who complete registration during the regular registration days as set forth in the University Calendar. This fee is not charged to part-time students who complete registration by the close of office hours on the second Saturday following the beginning of General Registration.

[2]The graduation fee is payable by all students at the beginning of the semester or session in which they expect to receive their degrees.

[3]One transcript of a student's record is furnished by the Registrar without charge. This fee is charged for furnishing an additional transcript.

[4]If the applicant applies for admission to and registers in the University within twelve months of the date of his qualifying for the test, a $10.00 credit shall be established for him.

[5]For graduate students not otherwise enrolled at time of final examination.

Part-time

1. Resident Students registration fee. . . . . $4.00 plus $4.00 per semester hour
2. Non-resident Students registration fee. . . . . $16.00 plus $12.00 per semester hour

Full-time or part-time students registered for Bachelors' or advanced degrees in Music or the Supervisory Training Program in Music shall pay the regular full-time or part-time tuition and registration fee for all courses in Music. No additional fees are assessed for Applied Music.

Students registered in other colleges or schools, including the Graduate School, may enroll in class courses in Music at the regular full-time or part-time fee per credit hour. These students may also enroll for Applied Music for a maximum of one half-hour lesson per week for one credit. The fee for this Applied Music instruction shall be $20.00 in addition to the aforementioned tuition and registration fee.

Practice and Rental Fees:

(a) Practice room—one hour a day, $6.00 per semester; two hours, $10.00; three hours, $14.00; four hours, $18.00.
(b) Pipe-organ practice—one hour a day, $10.00 per semester.
(c) Band and orchestra instruments—rental fee $2.50 per semester.

SUMMER SESSION FEES*

A full-time student in the Summer Session is one who is registered for 10 or more semester hours of work.

	Resident	*Non-Resident*
Tuition, per semester hour (Agriculture, Forestry, and Home Economics; Arts and Sciences; Commerce; Education; Engineering; Journalism; Mines; Creative Arts Center; Physical and Health Education, Recreation, and Safety	**$8.00	†$28.00
Tuition, per semester hour (Dental Hygiene, Law, Medical Technology, Nursing, Pharmacy)	**9.00	†29.00
Tuition, per semester hour (Dentistry and Medicine)	**12.00	†38.00
Health Service Fee‡	4.00	4.00
Mountainlair Fee‡	3.00	3.00
Student Union Building Fee‡	2.00	2.00
Cultural Program‡	1.50	1.50

*Health Service, Mountainlair, and Cultural Program fees are not included for students enrolled in field work courses.
**Includes $4.00 per semester hour Registration Fee.
†Includes $12.00 per semester hour Registration Fee.
‡Non-refundable fees required of full-time students. May be paid by part-time students who desire the services.

SEMESTER FEES

A part-time student (graduate or undergraduate) enrolled for courses in two or more colleges and schools shall pay fees at the rate per semester hour effective for the number of hours in each college and school.

If the student (graduate or undergraduate) is enrolled for 12 or more hours in courses offered by two or more colleges and schools, but less than 12 in any one, he shall be considered to be a full-time student and shall pay the fees for special services (Athletics, Health Service, Mountainlair, Cultural Program, and Student Union Building) in addition to the part-time rates per hour for courses in each college and school.

If the student (graduate or undergraduate) is enrolled for 12 or more hours in courses offered by colleges and schools in Group I, he shall pay the full-time rate effective for Group I. (Does not include Flight Training. Does not include Applied

SEMESTER FEES IN THE COLLEGES AND SCHOOLS

(See Footnotes 6, 7, 8, 9, 10)

	Full Time		Part Time (Per Semester Hour)	
	Resident	Nonresident	Resident	Nonresident
GROUP I Agr., For., and Home Econ. Arts and Sciences Commerce Creative Arts Center Education Engineering Journalism Mines Physical and Health Education, Recreation, and Safety	$65.75* plus Registration Fee of $50.00.	$230.75* plus Registration Fee of $150.00.	$4.00 plus $4.00 per semester hour Registration Fee.	$16.00 plus $12.00 per semester hour Registration Fee.
GROUP II Dental Hygiene Law Medical Technology (Jr. and Sr. Years) Nursing Pharmacy	$80.75* plus Registration Fee of $50.00.	$255.75* plus Registration Fee of $150.00.	$5.00 plus $4.00 per semester hour Registration Fee.	$17.00 plus $12.00 per semester hour Registration Fee.
GROUP III Dentistry Medicine	$142.75* plus Registration Fee of $50.00.	$360.75* plus Registration Fee of $150.00.	$8.00 plus $4.00 per semester hour Registration Fee.	$26.00 plus $12.00 per semester hour Registration Fee.

*Includes Athletics Fee $8.00; Student Organizations Fee $1.25; Daily Athenaeum Fee $1.50; Health Service Fee $6.00 (for Dental Hygiene; Medical Technology, junior and senior years; Dentistry and Medicine $9.00); Mountainlair $4.00; Student Union Building Fee $3.00; and Cultural Program Fee $2.00.

Parkersburg Branch of West Virginia University: $20.00 per semester hour.

Music for students who are not candidates for degrees in Music.) This student shall pay the part-time rate for any courses in colleges and schools in Group II and Group III.

If the student (graduate or undergraduate) is enrolled for 12 or more hours in courses offered by colleges and schools in Group II, he shall pay the full-time rate effective for Group II and may elect courses in colleges and schools in Group I at no additional cost or may elect courses in colleges and schools in Group III at the part-time rate effective for Group III. (Does not include Applied Music or Flight Training.)

If the student (graduate or undergraduate) is enrolled for 12 or more hours in courses offered by colleges and schools in Group III, he shall pay the full-time rate effective for Group III and may elect courses in Group I or Group II at no additional cost. (Does not include Applied Music or Flight Training.)

The University Board of Governors has ordered that students called to the armed services of the United States be granted full refund of refundable fees, but no credit, if the call comes before the end of the first three-fourths of the term, and that full credit by courses be granted to men called to the armed services of the United States if the call comes thereafter; provided, however, that credit as described above will be granted only in those courses in which the student is maintaining a passing mark at the time of his departure for military service. In the recording of final grades, for three-fourths of a term or more, both passing and failing grades are to be shown on the student's permanent record card.

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[6]A full-time student is one who is registered for 12 or more semester hours of work each semester of the regular academic year, or 10 or more semester hours of work during the Summer Session. A full-time student during the regular academic year receives an Identification Card which entitles him to admission to all athletic events. A full-time student during the regular academic year or during the Summer Session is entitled to free medical consultation and advice from the University physician. A moderate charge is made for room calls, X-rays, special laboratory tests, drugs furnished by the University Pharmacy, minor operations, treatment of fractures and dislocations, and intravenous treatment.

[7]A part-time student is one who is registered for fewer than 12 semester hours per semester during the regular academic year, or for fewer than 10 semester hours during the Summer Session.

[8]No person shall be considered eligible to register in the University as a resident student who has not been domiciled in the State of West Virginia for at least twelve consecutive months next preceding college registration. No nonresident student may establish domicile in this State, entitling him to reduction or exemptions of tuition, merely by his attendance as a full-time student at any institution of learning in the State. A minor student whose parents acquire a West Virginia domicile after the student's original registration will be deemed to have the domicile of his parents and become entitled to pay resident fees. Moreover any student who has originally paid nonresident fees may become entitled to pay resident fees, if after an interim of nonattendance or otherwise he has established a valid legal domicile in this State at least twelve months prior to his registration in the University. In any event, the appointment of a guardian for a minor student temporarily resident in West Virginia, other than the designation of a natural guardian, shall not in and of itself operate to establish a West Virginia domicile for such student.

[9]The minimum rate for non-credit courses is that charged for one semester hour of credit.

[10]Athletics Fee, Student Organizations Fee, Daily Athenaeum Fee, Health Service Fee, Mountainlair Fee, Cultural Program Fee, and Student Union Building Fee, all chargeable to Special Services, nonrefundable during this period.

Refunding of Fees

A student who officially withdraws from the University may arrange for a refund of fees by submitting to the University Comptroller evidence of approval of the refund by the Registrar.

To withdraw officially a student must apply to the Registrar for permission. Semester fees will be returned in accordance with the following schedule:

First refund period ending on the second Saturday following the beginning of General Registration.	50% of Athletics Fee, Student Organizations Fee, Daily Athenaeum Fee, Health Service Fee, Mountainlair Fee, Student Union Building Fee, and Cultural Program Fee, all chargeable to Special Services; and all other semester fees less $2.50. (Under no circumstances is the amount retained less than $2.50).
Second refund period ending on the fourth Saturday following the beginning of General Registration.	50% of Athletics Fee, Student Organizations Fee, Daily Athenaeum Fee, Health Service Fee, Mountainlair Fee, Student Union Building Fee, and Cultural Program Fee, all chargeable to Special Services; and 80% of all other semester fees.
Third refund period ending on the sixth Saturday following the beginning of General Registration.	60% of semester fees not chargeable to Special Services.[10]
Last refund period ending on the eighth Saturday following the beginning of General Registration.	40% of semester fees not chargeable to Special Services.[10]

COST OF AN ACADEMIC YEAR'S WORK

A student's textbooks will cost approximately $80.00 a year, and his registration fees $231.50 to $391.50 if he is a resident; or $761.50 to $1,027.50 if a nonresident. Students in engineering will use drawing instruments costing from $15.00 to $30.00. Non-refundable fees range from $2.00 to $16.00. In military and air science a $20.00 deposit is required to cover military equipment in the custody of the student, practically all of which is returned to the student when he accounts for his equipment. Board and room may be obtained at from approximately $660 to $720 a year. Traveling expenses, clothing, and other miscellaneous items will depend largely upon the taste and habits of the individual student. In general, however, it may be said that the legitimate cost of a 9-month term of residence at the University ranges from $1,200 to $1,800.

Registration

Persons not registered as University students and who are not members of its administrative or teaching staffs shall not be admitted to regular attendance in University classes.

All students are expected to register on days set apart for registration at the beginning of each semester or session of the University.

Immediately after completion of registration, all students must pay fees at the Comptroller's desk in the Field House Annex (South).

LATE REGISTRATION

No student will be permitted to register in the University after the eighteenth day of a semester or the ninth day of the Summer Session, without the special

permission of the dean of the college or school which he proposes to enter. No student registering late will be permitted to enroll for more hours of work than the number of weeks in actual attendance without the permission of the Committee on Scholarship of the college or school concerned.

VISITORS

Full-time University students may attend classes as visitors, provided they obtain the written permission of their advisers and of the instructors in classes they desire to visit. Members of the administrative or teaching staffs, or other regular employees of the University, may attend classes as visitors provided they obtain written permission of the chairmen of their departments and of the instructors in the classes which they desire to visit.

No record is kept of the work and attendance of persons admitted to classes as visitors and no credit is given for their work in such classes.

Persons eligible to attend classes in the University as visitors may obtain the proper blanks from the Registrar.

AUDITORS

Students may enroll in courses without working for grade or for credit by registering as auditors and by paying full fees. Credit or audit status must be indicated at the time of registration. *No change in status from audit to credit or from credit to audit will be made at any later date.*

Regulations Affecting Degrees

Candidates for degrees are eligible for graduation when they complete the requirements in the college or school in which they are registered which were in effect at the time of their first registration in that college or school, provided they apply for graduation within a period of seven years from the time of their first registration. Students who fail to complete the requirements for graduation within seven years from their first registration shall satisfy the requirements in effect at the time they apply for graduation.

The University Board of Governors has ordered that in view of public and professional responsibilities the faculty of each of the professional schools of West Virginia University shall have the authority to drop any student from its rolls whenever, by formal decision reduced to writing, the faculty finds that the student is unfitted to meet the qualifications and responsibilities of the profession.

All degrees are conferred by the Board of Governors upon recommendation of the faculties of the various colleges and schools. Degrees are granted at the close of the semester or summer session in which the students complete their work.

Candidates for degrees to be conferred at the close of the second semester must be present in person to receive their degrees unless excused by the deans of their colleges and schools. No individual may be exempt from the provisions of this University regulation except by official action of the Board of Governors.

BACCALAUREATE DEGREES

Credits and Grade Points Required

Less than 6 hours in an ancient or modern language will not be counted toward any University degree, diploma, or certificate unless work in the same language has been offered for entrance.

Six hours of English composition and rhetoric (English 1 and 2) are required of all candidates for the Bachelor's Degree in all colleges and schools of the University.

Eight hours of basic military science or aerospace studies are required of all freshman and sophomore men not specifically exempt.

Two hours of physical education for men (P.E. 1 and 2), to be taken during the first year in residence, and four hours of physical education for women, to be

taken during the first and second years in residence, are required for graduation, except in the case of students entering with advanced standing amounting to 58 semester hours or more. (See page 47 for specific requirements.)

Each baccalaureate degree is conditioned upon the completion of a specified number of semester hours of credit. For a tabular statement of the number of credit hours required for each degree, see the last column on pages 52 and 53 under the heading "Classification of Students."

All divisions of the University require minimum standards of scholastic quality. Grade points are computed only on grades earned at West Virginia University (including Potomac State College of West Virginia University). To be eligible for graduation, a student must have an average of "C" or an average of two grade points on all work for which he received grades (except "W" and "WP"). The College of Education, in addition to the general average of two grade points per credit hour in all subjects, requires an average of two grade points per hour of credit in Education and in each teaching field.

It is the student's responsibility to keep informed of his grade-point standing. This information may be obtained at any time from the dean of the college or school in which the student is registered.

English Proficiency Requirement

Undergraduate Students Entering the University After June 1, 1964 Who Are Candidates for an Initial Baccalaureate Degree

All such students who have completed English 2 at West Virginia University with less than a "C" grade will be required either to retake English 2 and establish a "C" or better grade, *or* take a college-level English proficiency examination to be administered by the English Proficiency Board. No student may proceed to the upper division (junior year) until he has attained either a "C" or better grade in English 2 at West Virginia University *or* a passing score in the English proficiency examination.

Transfer students will be required to take the English proficiency examination in the first semester of their residence. Those who fail to pass the examination must take English 2 at West Virginia University and establish a grade of "C" or better *or* pass the English proficiency examination within the first two semesters of their residence. Thereafter, they will be ineligible to continue other course work toward a degree or to graduate until the English proficiency requirement is satisfied.

Undergraduate Students Entering the University Before June 1, 1964 Who Are Candidates for an Initial Baccalaureate Degree

To qualify for graduation, all such students, including transfer students, are required either to complete English 2 at West Virginia University with a grade of "C" or better *or* to pass the English proficiency examination.

The foregoing regulations do not apply to students of foreign countries whose native language is other than English.

University Core Curriculum Requirements

All undergraduates who entered the University for the first time in September, 1964, or later must complete the following University Core Curriculum requirements in order to graduate:

I. Two semesters' work in English composition, exclusive of English 0.

II. Remedial work in mathematics to cover the deficiency if the student, upon entering the University, lacks proficiency in mathematics equal to that normally attained in two years of high school mathematics.

III. Twelve credit hours of work in selected approved courses in each of the three following disciplinary areas, including courses in at least two subjects in each group:

Group A: Art; music; foreign languages and literature, including Latin and Greek (above the elementary level); literature of the English language; philosophy, humanities.

Group B: Economics, geography, history, psychology, political science, social science, sociology.

Group C: Biological sciences (biology, botany, zoology, genetics), chemistry, geology, mathematics, physical sciences, physics.

Courses taken to fulfill the core curriculum requirements will be selected from a list to be prepared by the University Core Curriculum Committee. The list will include one or more courses in each of the above named disciplines and may also include both interdisciplinary courses and courses in disciplines closely related to those named. Students in certain curricula, if required to take Military Science or Aerospace Studies will be excused from a part of the Core Curriculum requirements at the discretion of the President of the University.

Physical Education General Program

All students entering the University with less than 58 semester hours of college credit are required to complete certain courses in physical education, unless previous credit is allowed. All men students take 2 hours of physical education courses, Phys. Ed. 1 and 2, during their first year of residence. All women students take 4 hours of physical education courses. Phys. Ed. 3 is required of all freshman women. To complete the 4-hour requirement, students elect one course from each of the following groups:

Group 1—Phys. Ed. 14, 15, 16 ..... (Swimming)
Group 2—Phys. Ed. 5, 11, 17, 18 ..... (Dancing)
Group 3—Phys. Ed. 4, 7, 8, 9, 10, 13, 21, 25 (Individual or Team Sports)

The University Health Service will determine whether students are physically qualified for required physical education courses and for active participation in other University activities.

Division of Military Science and Division of Aerospace Studies

Requirements

West Virginia University, a beneficiary of the Act of Congress of 1862, offers in time of peace four-year courses of instruction in Military Science and Aerospace Studies. Normally successful completion of one of these courses and degree requirements leads to a commission as Second Lieutenant in the United States Army Reserve, or the United States Air Force Reserve. Distinguished military graduates of West Virginia University may apply for and be offered commissions as second lieutenants in the Regular Army or the Regular Air Force, under conditions prescribed by law.

The course comprises two years of basic training (Military Science 1, 2, 3, and 4, or Aerospace Studies 1, 2, 3, and 4); two years of advanced training (Military Science 105, 106, 107, 108, or Aerospace Studies 105, 106, 107, and 108); and summer camp for six weeks' duration for Military Science students and four weeks' summer training for Air Force students during the summer following the junior year. The Army summer camp and Air Force summer training is conducted at government expense, and eligible students are paid approximately $120 monthly in addition to traveling expenses at the rate of 6 cents per mile.

All male students not specifically exempt by provisions of the appropriate paragraph below are required by Chapter 18, Article 11, of the official *Code* of West Virginia, and by orders of the Board of Governors of the University, to complete satisfactorily the entire basic course as prerequisite to graduation from the University.

Within deferment quotas established by Public Law 758, 80th Congress, qualified and selected enrolled students are offered the opportunity of being deferred by the Professor of Military Science or the Professor of Aerospace Studies from military service under the Selective Service Act of 1948 and Selective Service Extension Act of 1950, as amended by the Universal Military Training and Service Act, November, 1951 as amended, until completion of their military courses and receipt of the baccalaureate degree. Such deferment is subject to cancellation should the student not be selected for the advanced course, fail to remain in good standing, or fail to develop the qualities expected of an officer.

Transfer Junior level students may apply for the Advanced ROTC commissioning programs through the Professor of Military Science or the Professor of Aerospace

Studies not later than April. They must participate in six weeks summer training at a designated Army or Air Force installation prior to the fall semester. During this training the students will be paid at the rate of $78.00 per month, with travel pay at 6 cents per mile to and from training.

Curriculum

Basic Course: Instruction averages three hours per week for the four semesters of the freshman and sophomore years. Two hours of instruction each week are conducted in the classroom, and for half of each semester (first half of the first semester, last half of the second semester) a two-hour laboratory is conducted each week in which the student receives instruction in drill and command. These laboratories are held on Tuesday, Friday, and Saturday for Military Science students, and Monday, Wednesday, and Thursday for Aerospace Studies students. Two hours' credit is allowed for each semester's work.

Advanced Course: The third and fourth years of instruction in Military Science or Aerospace Studies comprise the Advanced Course and correspond to the junior and senior years of the student's academic course. Entrance into the advanced course is elective on the part of the student and selective on the part of the services. Selection is based on the student's record and on service regulations and in military science is limited in total numbers of yearly quotas. Application for the Military Science Advanced Course should be made at the beginning of the second semester of the student's sophomore year. A student must complete the basic Army or Air Force course, or if transferring from a college or university not offering ROTC, complete a six-week summer camp prior to entering Military Science 3 or Aerospace Studies 3. Eligibility for the Air Force Advanced Course begins with successful completion of the Air Force Officers Qualifying Test in the second semester of the freshman year. Candidates must pass a physical examination and meet a selection board in the second semester of the sophomore year. A grade-point average of 2.0 is one of the prerequisites for enrollment in the advanced programs.

Each student who is enrolled in the Advanced Course agrees to complete the course including summer camp and, if tendered, accept a commission as a second lieutenant in the U. S. Army or Air Force as prerequisites for graduation from the University unless excused by proper authority.

Senior Aerospace Studies students enrolled in Category I (Pilot) are required to participate in the Flight Instruction Program. This program consists of 35 hours of ground instruction and 36½ hours of dual and solo flight instruction for the private pilot's license. There is no additional fee for this program.

Senior military science students may participate in a flight instruction program if physically qualified and selected. The program is of the same content and duration as above and is in addition to the regular ROTC course. There are no additional fees for this program.

ROTC Financial Assistance Program

Both Army and Air Force programs will offer a limited number of full scholarships to selected students commencing with the 1965-66 school year. These will be granted for one to four years and will consist of full tuition, textbooks, laboratory fees, and a retainer fee of $50.00 per month while under scholarship.

Allowances

The advanced Army or Aerospace Studies student is paid an allowance of $40.00 per month. The Army student is paid monthly and the Aerospace Studies student is paid quarterly.

Uniform, equipment, and Military Science or Aerospace Studies textbooks are issued to all cadets.

Deposit

All ROTC students are required to pay a deposit of $20.00 to cover any loss or damage to Government property while in his possession. The deposit is paid to the University Comptroller at time of registration and it is refunded, less a nominal administrative charge, upon return of the undamaged property. Advanced cadets in both programs are permitted to keep their uniforms upon successful completion of the program.

Exemptions

The following students will not be required to enroll in the Division of Military Science or Division of Aerospace Studies, but may elect to do so with the approval of the Professor of Military Science or the Professor of Aerospace Studies:

(1) Those who are not citizens of the United States.
(2) Graduate students.
(3) Students who are taking only short courses, the special interim courses, or extension work.
(4) Transfer students who at the time of matriculation have established 58 semester hours with the Registrar of the University.
(5) Students who have successfully completed the two-year basic Army, Navy, or Air Force ROTC course at any institution maintaining a Senior Division unit. Those who have satisfactorily completed one, two, three, or four semesters of ROTC training in a senior division will be allowed comparable hours credit and exemption from comparable military training.
(6) Students who are more than 24 years and 3 months of age on day of registration.
(7) Students who are physically unable to perform military training.

Students who have had previous training, other than in a senior division ROTC unit, will be allowed exemption from military training as determined by the Professor of Military Science, or the Professor of Aerospace Studies, and the Registrar. Scholastic hours credit will be allowed for military training for which a student is exempted. Students applying for entrance who have had previous ROTC training should request the institution where such training was received to submit the pertinent ROTC student's records to the University prior to the date of registration.

Students with more than four months of continuous active and honorable active service in one of the armed forces are exempted from taking basic military training (i.e., Military Science or Aerospace Studies 1, 2, 3, 4). Scholastic hours credit will be allowed for military training for which a student is exempted. See "Courses of Instruction" (Page 363 of this bulletin) for Military Science and Aerospace Studies.

Exemptions will be determined by the Director of the Student Health Service (physical exemptions), and the Professor of Military Science or the Professor of Aerospace Studies, who will notify the Registrar and the student's adviser.

Organization

The conduct of military science and aerospace studies instruction is the responsibility of the Professor of Military Science and the Professor of Aerospace Studies, who, together with their military staffs, are officers and non-commissioned officers of the U.S. Army and the U.S. Air Force on duty at West Virginia University.

ROTC Bands

There is an Army ROTC Band and an Air Force ROTC Band. Membership is restricted respectively to basic Army and Air Force ROTC students. Assignment to one of the bands is determined by audition before the Director of the Band.

Graduation With Honors and With High Honors

Effective June 1, 1949, the University established the practice of awarding "Honors" and "High Honors" to qualified students who are candidates for the initial baccalaureate degrees. The following regulations govern these awards:

1. The computation of the average shall begin with the student's penultimate term or semester and continue in reverse chronological order until at least 48 semester hours have been counted. If, in order to total the required number of hours it is necessary to include any part of a semester or term, the work of the whole semester shall be included.

2. No graduate shall be eligible for honors unless he shall have completed at least half of the semester hours required for his degree in West Virginia University.

3. Enrollment at the University is required during the senior year.

4. No graduate shall be eligible for honors if his grade-point average for his final semester or term is less than 3.0.

5. Subject to the above conditions, all candidates for a baccalaureate degree whose average, as shown by the portion of the work used, is 3.6 or above, shall be graduated with "High Honors." All those whose average is less than 3.6 but 3.3 or above, shall be graduated with "Honors."

6. Fitting recognition of graduation with honors shall be made on the candidate's diploma and on the commencement program.

Requirements as to Residence

Students who come to the University from other colleges or universities should make the transfer not later than the beginning of their third year and in no case will a student who matriculates in the University later than October 1 in any year be permitted to receive a degree at the next commencement.

In special cases students who desire to leave the University at the close of their third year to enter another institution with the purpose of taking a combined course leading to two degrees or of preparing for graduate study, upon application beforehand to the Committee on Scholarship of the college or school in which they are registered, may be permitted to do the work of the fourth year, or a part thereof, at such other institution and to receive the Bachelor's Degree from the University upon the presentation of the proper credits.

Except in the College of Law, no student will be granted a Bachelor's Degree by the University who has not done either a total of 90 hours or the last 30 hours of his work in actual residence at the University. No student may receive the Degree of Bachelor of Laws without at least three semesters in residence at the College of Law and the successful completion of courses aggregating at least one-half of the total number of hours required for graduation. Except with the permission of the Scholarship Committee, the last 27 hours of work must be taken in the College of Law of West Virginia University.

Maximum and Minimum Work

The maximum and minimum number of hours per semester as well as the maximum number of hours per year for which a student may register during the regular academic year of the University are as follows:

	Minimum Hours Per Semester	*Maximum Hours Per Semester*	*Year*
Agriculture	14	20	..
Arts and Sciences	14	18	..
Commerce	14	18	..
Creative Arts Center	14	21	..
Dentistry	16	22	..
Education	..	18	36
Engineering	14	20	..
Forestry	14	20	..
Home Economics	14	18	34
Journalism	14	18	36
Law	13	16	..
Medicine	17	20	..
Mines	12	20	..
Nursing	14	20	..
Pharmacy	14	20	..
Physical and Health Education, Recreation, and Safety	14	20	..

A student desiring to do irregular work, more or less than the prescribed number of hours in any college, must obtain permission from the Committee on Scholarship in his college or school. This permission is not valid until it has been reported to the Registrar for record.

Work Done Out of Residence

It is the policy of the University to discourage the taking of regular residence courses in absentia. In the case of courses begun at the University and not completed because of illness or for other acceptable reasons, however, permission to complete the work in absentia under the direction of regular University instructors may be granted by the Committee on Scholarship; but in such case credit should be given only upon a report of a grade of no less than "C" on final examination.

This regulation does not apply to University extension courses.

Approval in writing must be secured in advance to elect courses offered elsewhere. An overall average of "C" is required on all work completed at the University in order to obtain such approval. Credit will be accepted for transfer for courses carrying a grade of "C" or higher when the conditions indicated above have been met.

Credit for Correspondence Work

Credit up to a maximum of 30 semester hours for work completed by correspondence in non-laboratory courses will be accepted by the University when such work is given by accredited colleges or universities that accept this work for credit toward their own degrees and whose residence work is accepted by West Virginia University.

College Credit Defined

A college credit or semester hour represents the amount of work done in one recitation hour per week for the duration of a semester. Normally a student will spend two hours preparing for an hour recitation period. As a rule, two to three hours of laboratory work are equivalent to one hour of recitation.

Substitution for Required Courses

A student who desires to substitute another course for any course prescribed in his curriculum or required for the degree toward which he is working must obtain permission for such substitution from the Committee on Scholarship in his college or school, but there can be no substitution from group to group.

Withdrawal from the University

A student who desires to withdraw from the University must obtain a withdrawal card from the office of the Registrar, 205 Administration Building. Withdrawal procedure will be explained to him when he obtains this card.

Students who withdraw without permission will receive at the end of the semester a grade of "F" (failure) in each of the courses for which they are registered and will be indefinitely suspended from the University.

Students who desire to drop part of their work may withdraw from classes in which they are enrolled with a grade of "W" at any time prior to the end of the second week following the date set for mid-semester reports. Withdrawal permits must be approved by the adviser and accepted by the Registrar. If such withdrawal reduces the student's hours below the required minimum, the permit must be approved by the Scholarship Committee. Withdrawals after the above date will be permitted only in exceptional cases and must be approved by the Scholarship Committee of the college or school in which the student is registered.

Students must present a signed statement from the Librarian that they have returned all books and paid all library fines before they will be allowed to withdraw.

Re-Entry After Withdrawal

Students required to withdraw from one college or school of the University because of failure in their work and permitted to transfer to another unit of the University may not again register in the college or school in which they were originally registered without the consent of the Scholarship Committee of that college or school.

CLASSIFICATION OF STUDENTS

The following table shows the number of semester hours required for classification as second-year, third-year, and fourth-year students and for graduation in the several colleges, schools, and divisions. First-year students must satisfy the requirements as set forth beginning on page 33.

COLLEGE AND DEGREE	HOURS REQUIRED TO CLASSIFY AS Second-Year Student	Third-Year Student	Fourth-Year Student	Required for Degree
AGRICULTURE, FORESTRY, AND HOME ECONOMICS				
B.S. (Bachelor of Science)	26	64	100	144
B.S. in Agriculture (B.S.AGR.)	26	64	100	144
B.S. in Forestry (B.S.F.)	30	70	110	150
B.S. in Wood Science (B.S.W.S.)	30	60	95	138
B.S. in Home Economics (B.S.H.E.)	25	58	92	128
AGRICULTURAL ENGINEERING				
B.S. in Agr'l. Eng'g. (B.S.AGR.E.)	30	72	112	145
ARTS AND SCIENCES*				
Associate in Arts (A.A.)	25	..	..	64
Bachelor of Arts (A.B.)				
Regular	25	58	92	128
Premedical	32	58	96	128
Combined (Dentistry)[11]	32	58	96	132
Combined (Medicine)[12]	32	58	96	132
BACHELOR OF SCIENCE (B.S.)				
Geology	32	58	99	132
Chemistry	34	69	103	136
Nursing Education	25	58	92	128
Physics	34	69	103	136
Social Work	25	58	92	128
Speech Correction	34	68	104	140
COMMERCE				
B.S. in Bus. Ad. (B.S.BUS.)	..	58	92	128
B.S. in Economics (B.S.EC.)	..	58	92	128
CREATIVE ARTS CENTER				
MUSIC				
Bachelor of Music (B.MUS.)	30	64	102	136
ART				
B.A. in Art (A.B.)	30	64	102	136
DRAMA				
Bachelor of Fine Arts in Drama (B.F.A.)	30	64	102	136
DENTISTRY				
Doctor of Dental Surgery (D.D.S.)	33	70	106	142
B.S. in Dental Hygiene (B.S.D.H.)	30	65	101	136

*Unless otherwise stated, a minimum of 128 hours is required for all degrees awarded by the College of Arts and Sciences. This must include at least 124 hours exclusive of required Physical Education and required Military or Air Science.

[11]Fourth year in the School of Dentistry.
[12]Fourth year in the School of Medicine.

COLLEGE AND DEGREE	HOURS REQUIRED TO CLASSIFY AS Second-Year Student	Third-Year Student	Fourth-Year Student	Required for Degree
EDUCATION[13]				
B.S. in Elem. Educ. (B.S.E.ED.)	..	58	92	128
B.S. in Secondary Educ. (B.S.SEC.ED.)	..	58	92	128
ENGINEERING[14]				
Bachelor of Science	27	60	94	133
B.S. in Aerospace Eng'g. (B.S.A.E.)	30	72	112	146
B.S. in Chem. Eng'g. (B.S.CH.E.)	30	72	112	146
B.S. in Civil Eng'g. (B.S.C.E.)	30	72	112	148
B.S. in Elec. Eng'g. (B.S.E.E.)	30	72	112	144
B.S. in Ind. Eng'g. (B.S.I.E.)	30	72	112	146
B.S. in Mech. Eng'g. (B.S.M.E.)	30	72	112	143
JOURNALISM				
B.S. in Journalism (B.S.J.)	..	58	92	128
LAW				
Bachelor of Laws (LL.B.)	27	54	..	81
MEDICINE				
Doctor of Medicine (M.D.)	36	72	†	‡
B.S. in Medical Technology (B.S.MED.TECH.)	25	58	100	135
MINES				
B.S. in Eng'g. of Mines (B.S.E.M.)	30	72	112	154
B.S. in Petroleum Eng'g. (B.S.PET.E.)	30	72	112	154
NURSING				
B.S. in Nursing (B.S.NSG.)	30	64	96	133
PHYSICAL AND HEALTH EDUCATION, RECREATION, AND SAFETY				
Bachelor of Science in Physical Education (B.S.P.E.)	28	58	92	128
Bachelor of Science in Recreation (B.S.REC.)	28	58	94	130

†At least 3 quarters of clinical work.
‡At least 7 quarters of clinical work.

EXAMINATIONS AND REPORTS

COURSES

As a rule courses extend through one semester only, though some are of a year's duration. No credit will be given for less than an entire course except by special order of the Committee on Scholarship. Grades given at the end of the first semester in courses extending throughout the year are merely indicative of the quality of work done by the student to that point and do not give credit for the part of the course so far completed. Such first-semester grades may be considered in determining the final grade, however.

[13]For the Degrees of Bachelor of Science in Education, at least 10 hours of residence work must be in Education.

[14]Students matriculating with 58 or more hours of credit may graduate without credit for Physical Education, thus reducing the total hours required for graduation.

Mid-Semester and Final Examinations

In practically all courses offered in the University, the student receives both a mid-semester grade and a final grade. The mid-semester grade is based on the daily recitation grades and a special test given during one or more regular recitation periods. These grades are not entered on the Registrar's records. The final grade is based on the class standing for the entire semester and on a written final examination to which a special period of two or three hours is devoted.

Examination Periods

Mid-semester examinations are held during the week immediately preceding the day for mid-semester reports as set forth in the University Calendar. Final examinations are held during the last week of each semester of the academic year, and during the last two days of the Summer Session.

Absence from Examinations

Students are required to take all regular examinations. If a student attends a course throughout the semester and is absent from examination without permission, the instructor shall count the examination as zero and report the final grade as "F." If, in the opinion of the instructor, absence of the student was for satisfactory reason, the fact will be recorded on the student's class ticket, the grade "I" will be returned, and the student may, upon application to the instructor, take the examination at a later date.

Reports

Mid-semester grades are reported to students' advisers and to deans.

Final grades are reported by instructors directly to the Computer Center within 48 hours after the closing hour of the examination. The rule also applies to the final grades of all students registered in other colleges or schools of the University who are enrolled in law courses.

The final standing of all seniors provisionally approved for graduation shall be reported by their instructors to the deans of their colleges or schools, and the final standing of all graduate students provisionally approved for graduation shall be reported to the Dean of the Graduate School. Special report cards are supplied by the Registrar.

A report of each student's work is made at the close of the semester or summer session to the student himself or to his parents or guardian.

SCHOLASTIC STANDING AND GRADE POINTS

Grading System

A—excellent (given only to students of superior ability and attainment)
B—good (given only to students who are well above average, but not in the highest group)
C—fair (average students)
D—poor but passing[15]
F—failure
I—incomplete
W—all withdrawals prior to the end of the second week following the date set for mid-semester reports
WP—withdrew passing subsequent to the end of the second week following the date set for mid-semester reports
WF—withdrew failing subsequent to the end of the second week following the date set for mid-semester reports
X—auditor, no grade and no credit

[15]Veterans of World War II or Korea may register for courses in which they have a grade of "C" or higher, but no credit will be given for the new listing.

Absences

Students shall attend all classes, including laboratory sessions, for which they are registered, unless prevented from doing so by illness, injury, authorized University activities, or other reasons approved by their deans. The student who is absent for any of the foregoing reasons is nevertheless responsible for the work missed.

Grade Points

The grade-point average is computed on all work for which the student has registered, except for the courses with grades of "W" and "WP," and is based on the following grade-point values:

A	B	C	D[16]	F	WF	I	X
4	3	2	1	0	0	0	0

Provided, however, that when a student receives a grade of "I" and later removes the incomplete grade, his average grade-point standing shall be calculated on the basis of the new grade.

If the final grade of a student in any course is "F," the student must take the course again in residence at the University if he desires to receive credit for it, unless the dean of the college or school authorizes the exception. The grade of "I" is given when an instructor believes that the course work is unavoidably incomplete or that a supplementary examination is justifiable. The grade of "I" must be removed within the following semester or the next semester in which the student is in residence, and becomes a failure unless special permission is granted by the appropriate Scholarship Committee to postpone removal.

Duties of Committee on Scholarship

The Committee on Scholarship shall have authority to proceed according to its best judgment in regard to delinquent students referred to it for consideration.

All orders of the committee shall become effective when approved by the dean of the college or school.

In the exercise of its authority the Committee shall not suspend a student during a semester except for willful neglect and in cases where the student's class grades are so low that further class attendance would be a waste of time. No suspension shall become effective until approved by the dean of the college.

Duties of Instructors

Each instructor shall be responsible for keeping an attendance record of students in his classes and shall report an excessive number of absences to the student's dean and his adviser.

Duties of Advisers

Each student on entering the University is assigned to an adviser. It is the duty of advisers to assist students in preparing schedules, to assign them to classes, and to certify their study lists to the Registrar. The adviser is expected to give to students assigned to him such advice and sympathetic guidance as they may need in the pursuance of their work in the University. Students are expected to go freely to their advisers to discuss with them their problems.

[16]Students, unless enrolled in the School of Dentistry, College of Law, School of Medicine, School of Nursing, or School of Pharmacy, are permitted to reregister at West Virginia University for any courses for which a grade of "D" has been received at West Virginia University while first-year students. (See page 52 for classification of students). In such cases the second grade shall supersede the first, providing it is not lower than "D." All work attempted after the first year shall be included in the computation of the grade-point average for degree purposes.

For teacher certification the student is responsible for every registration in a course for which a grade of A, B, C, D, F, WF, or I is received.

The University grade-point average is computed on all work attempted in all years.

All advisers, upon receipt of reports of excessive numbers of absences, shall have conferences with the students concerned and shall make such recommendations and adjustments as are desirable and feasible. If the adviser does not find a satisfactory solution after a conference with the student, he shall report the case to the dean of the college or school.

Probation and Suspension

Any student whose mid-semester grades are below passing in courses amounting to more than half of the total number of semester hours for which he is registered shall be placed on probation for the remainder of the semester. The terms of probation are determined by the respective scholarship committees.

Any student whose grades at the end of any registration period are below passing in courses amounting to more than half the total number of semester hours for which he is registered shall be suspended from the University. A freshman, subject to the operation of this rule at the end of his first registration period in residence, shall be placed on probation for the succeeding registration period.

All actions of the Committee on Scholarship and of the dean or instructor of the college or school that affect the standing of a student shall be reported by the dean to the Registrar.

Part III

Curricula and Courses

ABBREVIATIONS

The following abbreviations are used in the descriptions of courses:

I—a course given in the first semester.
II—a course given in the second semester.
I, II—a course given in each semester.
1 and II—a course given throughout the year.
S—a course given in the Summer Session.
hr.—number of credit hours per course.
consent—consent of instructor required.
PR:—prerequisite.

PLAN FOR NUMBERING COURSES

For convenience each course of study is designated by the name of the department in which it is given and by the number of that course. The plan for numbering is as follows:

Courses 1 to 99—courses intended primarily for freshmen and sophomores.
Courses 100 to 199—courses intended primarily for juniors and seniors.
Courses 200 to 299—advanced courses for juniors, seniors, and graduates.

SEMESTER COURSE SCHEDULES

Before the opening of each semester, a schedule is printed announcing the courses that will be offered in the College of Agriculture, Forestry, and Home Economics; the Division of Aerospace Studies; the College of Arts and Sciences; the College of Commerce; the Creative Arts Center; the School of Dentistry; the College of Education; the College of Engineering and the School of Mines; the School of Journalism; the College of Law; the School of Medicine; the Division of Military Science; the School of Nursing; the School of Pharmacy; the School of Physical and Health Education, Recreation, and Safety; and the Evening Education course offerings.

The College of Agriculture, Forestry, and Home Economics

ADMINISTRATION—COLLEGE OF AGRICULTURE, FORESTRY, AND HOME ECONOMICS

ROBERT STANDISH DUNBAR, JR., B.S.AGR., M.S., PH.D., *Dean of College of Agriculture, Forestry, and Home Economics and Professor of Animal Science* (1964), 1952.

OTHMAR JOSEPH BURGER, B.S., M.S., PH.D., *Assistant Dean of the College of Agriculture, Forestry, and Home Economics and Director of Resident Instruction (Division of Agriculture); Professor of Agronomy* (1959), 1950.

MARY ROSE JONES, B.S., M.S., *Assistant Dean of the College of Agriculture, Forestry, and Home Economics and Acting Director of the Division of Home Economics; Associate Professor of Home Economics* (1954), 1941.

W. CLEMENT PERCIVAL, B.S., M.S., PH.D., *Assistant Dean of the College of Agriculture, Forestry, and Home Economics and Director of the Division of Forestry* (1959), 1934.

AUDREY HOWARD VANLANDINGHAM, B.S., M.S., PH.D., *Associate Dean of the College of Agriculture, Forestry, and Home Economics and Director of the Agricultural Experiment Station* (1959), 1929.

ORGANIZATION

Agriculture, forestry, and home economics work at West Virginia University is organized under the College of Agriculture, Forestry, and Home Economics. For the purpose of administration the College is divided into four branches:

I. Resident instruction in agriculture.
II. Resident instruction in forestry.
III. Resident instruction in home economics.
IV. The Agricultural Experiment Station.

The work of these divisions is closely interrelated. Although some members of the staff devote full time to college instruction, research or extension work, many others divide their time between two or three of the divisions.

OBJECTIVES

To provide an academic setting of excellence in which a young man or woman may attain his or her higher education goals.

To provide a selection of courses through various options for organizing different programs of study leading to proficiency in many professional fields directly in and related to agriculture, forestry, and home economics.

To provide advanced training courses leading to degrees at master's and doctoral levels.

To carry out a research program in fields and problem areas of pertinence to West Virginia.

HISTORY AND FACILITIES

In 1895 the College of Agriculture was established as a distinct college in the University. The Agricultural Experiment Station was founded in 1888 and became part of the College at the time the latter was instituted. The Cooperative Extension Service was added in 1913, and in 1914 the Department of Home Economics was transferred from the College of Arts and Sciences. Organization of the College was completed in 1937 when a full four-year course in forestry was added. The name of the unit then was changed to "The College of Agriculture, Forestry, and Home Economics."

The Agricultural Experiment Station was established by the Board of Regents by authority of an Act of Congress known as the Hatch Act. Further support was given by Acts of Congress known as the Adams Act, the Purnell Act, the Bankhead-Jones Act, the Research and Marketing Act of 1946, and the Hatch Act as amended in 1955.

The College now has 900 acres of land for farming lying a short distance from the University campus. This land is divided into five farms. Each of the farms is equipped with modern farm buildings and with special buildings for classroom, experimental, and laboratory work. A 40-acre woodlot is used for instruction and experimentation in forestry.

At Alvon, in Greenbrier County, the Division of Forestry maintains Camp Arthur Wood, devoted to field instruction and land surveying and timber estimating for students in the division who have passed two years of the professional forestry course. Camp Arthur Wood, situated in the Monongahela National Forest, is equipped with permanent buildings for instruction and living accommodations.

The Division of Forestry also has 498 acres of forest land in Randolph County which is being used for research and educational training. In addition to this work, the tract is used by extension foresters to demonstrate sustained yield and forest operation for the production of hardwood timber.

During 1951 an agreement was completed between the University and the Island Creek Coal Company making the 3,000-acre Island Creek Experimental Forest available for research in applied forestry. The experimental work is open to inspection by forestry students.

Cooper's Rock State Forest, an area of 13,000 acres fronting on Cheat Lake, is less than ten miles from the University. By agreement between the University and the Conservation Commission of West Virginia, an 8,000-acre part of this forest has been set aside as the West Virginia University Forest, Division of the Cooper's Rock State Forest. This area is managed by the Division of Forestry for research and educational purposes.

Branch experiment stations are maintained at Wardensville, Point Pleasant, Kearneysville, and Reedsville. The Reymann Memorial Experimental Farms at Wardensville was established in 1917. It occupies 987.5 acres of farm land on the Cacapon River in Hardy County. The farm is being operated on an experimental basis involving pasture improvement, erosion control, soil rebuilding, water conservation, irrigation, crops, beef cattle, sheep, and poultry.

The Ohio Valley Experiment Farm of 150 acres at Point Pleasant on the Ohio River was acquired in 1948. It is operated as a unit for the experimental work in tobacco and truck and field crops of special interest to the farmers of the Ohio and Kanawha valleys.

The University Experiment Farm, a tract of 158 acres near Kearneysville in the eastern section, was established in 1930 as a branch experiment station for the study of problems relating to fruit production, including insect and disease control, as well as problems of general farming typical of the section.

The Reedsville Experiment Farm in Preston County was acquired in 1944. Work on this 475-acre farm consists of research programs with potatoes, ornamentals, small fruits, corn and legumes in rotations, livestock, and agricultural engineering.

A Nursery School is located close to Oglebay Hall.

Bulletins, circulars, and pamphlets—setting forth the results of experiments, investigations, and recommendations—are published for free distribution and may be obtained from the County Extension Agent in each county.

With its farm land, buildings, and equipment the College of Agriculture, Forestry, and Home Economics offers thorough and complete training in most branches of agriculture, forestry, and home economics that is applicable to West Virginia conditions.

HEADQUARTERS FOR COLLEGE DIVISIONS

The Dean of the College, the Director of Resident Instruction for Agriculture, and the Director of the Agricultural Experiment Station are all located in the Agricultural Sciences Building on the Evansdale Campus. The Director of the Division of Forestry is located in the Forestry Building on the Evansdale Campus. The Director of the Division of Home Economics is located in Oglebay Hall on the Main Campus.

FACULTY COMMITTEES

Courses and Hours: Messrs. R. S. Dunbar, Jr. (ex officio), *Chairman*, W. W. Luchsinger, Homer Evans, and K. L. Carvell; Sara Ann Brown.

Scholarship: Messrs. C. B. Taylor, *Chairman*, H. A. Wilson, and D. L. Kulow.

Library: Messrs. Gerald Jung, *Chairman*, and C. B. Koch; Barbara Armstrong.

Student Aid and Grants: Messrs. O. M. Neal, Jr., *Chairman*, M. G. Brooks, and Valentin Ulrich; Betty L. Ramsey.

Executive: Messrs. R. S. Dunbar, Jr. (ex officio), *Chairman*, John Luchok (ex officio), M. E. Gallegly, Homer Patrick, and E. H. Tryon; Mary Rose Jones.

College Regulations

Students in the College of Agriculture, Forestry, and Home Economics must comply with University regulations dealing with scholarship. Specific regulations that apply to the College are described in the following sections.

CREDIT LOAD PER SEMESTER

The minimum work per semester is 14 credit hours in each of the three Divisions.

A student with less than 14 hours of meeting all requirements for a bachelor's degree shall not be required to register for the minimum work load. An adviser may register such an individual as a part-time student.

In the Divisions of Agriculture and Forestry a student in his first semester of enrollment may be permitted to reduce his course load to 12 semester hours provided he receives his adviser's approval.

The maximum work load per semester is 18 hours in the Division of Home Economics and 20 hours in the Divisions of Agriculture and Forestry.

A student who has at least a 2.5 cumulative grade-point average may be permitted by his adviser to enroll for 21 hours in the Divisions of Agriculture or Forestry and 19 hours in the Division of Home Economics.

Students who wish to carry more than 16 hours while doing student teaching must have the approval of the Director of the Division of Home Economics.

A married woman who maintains a home and is also enrolled in the College of Agriculture, Forestry, and Home Economics may register for less than 14 hours per semester.

PHYSICAL EDUCATION COURSES

Not more than 2 hours of credit for physical activities courses will be allowed toward a degree in the case of male students; 4 in the case of female students, except when physical education is a minor for a teaching certificate for a student in home economics.

OFF-CAMPUS STUDY TRIPS

As part of the work in several of the courses offered in the College, students visit large farms, specialized farms or farming regions, agriculture-related businesses and city markets. Students are expected to pay their own expenses, which are kept at a moderate figure.

SUBSTITUTION OF REQUIRED COURSES

Each petition to substitute another course for a prescribed course must be signed by the student and the student's adviser, and approved by the director of the division concerned.

STUDENT PETITIONS

1. Petitions may be submitted to the Scholarship Committee: (a) to register for more than maximum hours regularly allowed; (b) to register for less than minimum load; (c) to drop courses after the regular withdrawal date; (d) for reentry after scholastic suspension, and (e) to transfer into the College with a grade-point deficiency accumulated in another college.

2. Petitions should be prepared on special forms and must include the recommendation of the student's adviser.

3. Barring unusual and unforeseen circumstances, a student is under obligation to complete the courses in which registration was made. Failure in a course at mid-semester does not constitute a reason for withdrawal.

4. Students may appear in person before the Scholarship Committee in support of their petition.

5. Students may appeal decisions of their adviser, Scholarship Committee, and Division Director to the Dean.

6. Students should submit petitions at an early date. Delay may result in denial because sufficient evidence may not be available.

Action by Scholarship Committee

Notice of the recommendation by the Scholarship Committee regarding a petition, after approval by the Dean, shall be sent to the student, to his adviser, and the Director of the Division in order that the report can be filed with the student's scholastic records.

TRANSFERRING CREDITS

Students intending to transfer credits from another institution to the College of Agriculture, Forestry, and Home Economics should indicate their desire to do so sufficiently in advance of registration time so that the Office of Admissions can evaluate the courses proposed for transfer. If it happens that a student does not have this information at registration time, deferral on acceptance of the course for credit will be made until the needed information is obtained. In event that it is impossible to obtain the needed information, or if the student would prefer this alternative, then the department in which course credit is being requested will, after payment of the proper fee to obtain an examination permit, give to the incoming student an examination comparable to that given to other students at West Virginia University in similar course work. If a grade of "C" or better is made, the student will be given credit for the course.

TRANSFER STUDENTS

Students without scholastic deficiences and already enrolled in the University may transfer into the College with the approval of the respective director of the division.

Prospective students with grade-point deficiences from another college or university may not enter the College of Agriculture, Forestry, and Home Economics without permission from the Dean upon recommendation by the Scholarship Committee and the Director of the Division in which the student wishes to enroll. Requests from students from college and universities other than West Virginia University should be addressed to the Office of Admissions, West Virginia University.

Petitions from students with more than 11 grade-point deficiences in another college or university usually will not be approved by the College of Agriculture, Forestry, and Home Economics unless the student has been away from the University at least one academic year.

CLASSIFICATION OF STUDENTS

The following table shows the number of semester hours required for classification as second-year, third-year, and fourth-year students, and for graduation, according to the curricula in the College of Agriculture, Forestry, and Home Economics.

DEGREE	HOURS REQUIRED TO CLASSIFY AS Second-Year Student	Third-Year Student	Fourth-Year Student	Required For Degree
B.S. (Bachelor of Science)	26	64	100	144
B.S. in Agriculture (B.S.Agr.)	26	64	100	144
B.S. in Forestry (B.S.F.)	30	70	110	150
B.S. in Wood Science (B.S.W.S.)	30	60	95	138
B.S. in Home Economics (B.S.H.E.)	25	58	92	128
B.S. in Agr'l Eng'g. (B.S.Agr.E.)	30	72	112	145
B.S. in Landscape Architecture (B.S.L.A.)	26	64	100	144

THE "D" REPEAT RULE

Students enrolled in the College of Agriculture, Forestry, and Home Economics are permitted to reregister at West Virginia University for any courses for which a grade of "D" has been received at West Virginia University while first-year students. In such cases the second grade shall supersede the first, providing it is not lower than "D." All work attempted after the first year shall be included in the computation of the grade-point average for degree purposes.

For teacher certification the student is responsible for every registration in a course for which a grade of A, B, C, D, F, WF, or I is received.

The University grade-point average is computed on all work attempted in all years.

CREDITS FOR GRADUATION

A total of 128 hours is required for the Bachelor of Science Degree in Home Economics. Fifty-eight hours, to include Home Economics Laboratory (H.E. 234), must be selected from upper-division courses (courses numbered 100 or more). Credit hour requirements for Agriculture and Forestry, including Military Science or Aerospace Studies and Physical Education, are 144 and 150, respectively.

GRADE-POINT DEFICIENCIES

Academic Warning

Each student with the following grade-point deficiencies at the end of any semester shall be placed on academic warning:

First- and second-year students	1 through 11
Third-year students	1 through 8
Fourth-year students	1 through 4

Each student on academic warning shall be advised in writing of his scholastic position and the consequences which result from scholastic deficiencies. The letter should be sent from the respective director of the division with a copy going to the parent or guardian, the adviser, and to the student's official record which is maintained in the office of the division director.

Academic Probation

A student with more than the following grade-point deficiences at the end of any semester shall be placed on probation:

First- and second-year students	11
Third-year students	8
Fourth-year students	4

A student who has been readmitted after scholastic suspension shall be placed on probation.

Any student on probation or suspension from another college or university at the time of acceptance into the College shall be placed on scholastic probation.

Each student on probation shall be advised in writing. The letter shall be sent from the respective director of the division, with a copy going to the parent or guardian, adviser, Dean, and the student's official record.

Each student on probation for two consecutive semesters shall appear before the Scholarship Committee prior to registering for the next semester.

A student may remove himself from probation by reducing his grade-point deficiency below the required minimum for the student.

Suspension

A student with a grade-point deficiency in excess of 30 shall be suspended.

A student on probation for three successive semesters shall be suspended at the end of the third semester unless he has reduced his grade-point deficiencies below the minimum for probation or has met the level of progress outlined by the Scholarship Committee.

A student who is readmitted after scholastic suspension or admitted into the College while on probation in another college, and fails to meet the level of performance required by the Scholarship Committee shall be suspended.

A student with senior standing who has a grade-point deficiency for three successive semesters in senior standing shall be suspended.

Each suspended student shall be advised in writing. The letter shall be sent from the respective director of the division with a copy going to the parent or guardian, adviser, Dean, Director of Residence Halls, Registrar, and to the student's official record.

A student who has been suspended for grade-point deficiencies may be readmitted with the approval of the Scholarship Committee. Except in unusual circumstances, suspended students will not be reinstated within a year after first suspension or within three years after second suspension.

In determining deficiencies for suspension or probation, two summer sessions shall be considered as one semester.

ABSENCES

Students shall attend all classes, including laboratory sessions, for which they are registered, unless prevented from doing so by illness, injury, authorized University activities, or other reasons approved by their dean. The student who is absent for any of the foregoing reasons is nevertheless responsible for the work missed.

Notice of excessive absences, reported to the director of the division, shall become a part of the student's official record which is maintained in the office of the director of the division.

REQUIREMENTS FOR EXCUSED ABSENCES

Excused absences will be granted by the division director for approved off-campus trips required in connection with a course taken for credit.

Excused absences may be granted to students with at least a 2.0 grade-point average for activities such as fraternal meetings, club meetings and judging contests. The decision in each instance shall be based on the merits of the case. Requests for excused absences shall be denied when the cumulative grade-point average is less than 2.0.

Grade-point averages for a first-semester freshman and transfer student may be determined from the mid-semester grade report, if available. If not available, the freshman or transfer student shall present statements from instructors showing that his work is satisfactory to date.

CREDIT DEFINED

The "semester hour" is the standard for computing the amount of work required for graduation. The "hour" represents the amount of work done in one semester (about eighteen weeks) in one recitation with two preparation hours per week or three hours practice or laboratory work requiring no outside preparation.

GRADUATE WORK

Complete information concerning graduate work in the College of Agricuture, Forestry, and Home Economics may be found in the 1965-66 Graduate School *Announcements.*

Student Activities and Advisers

STUDENT ACTIVITIES

Students in the College have many opportunities for participating in College-sponsored events, College student organizations, and College honoraries. Numerous other organizations on the campus are open to University students.

Every student entering judging courses offered in the College has the opportunity to compete for a place on livestock, meat, dairy cattle, dairy products, vegetable, flower, and fruit-judging teams. Qualified teams compete at regional, national, and international contests.

Agriclub is a general club open to all persons who are interested in the betterment of agriculture. It is the combining club for all students in the College of Agriculture, Forestry, and Home Economics, regardless of the individual's particular field. Service and interest are its goals.

Alpha Tau Alpha is a national agricultural education professional honorary fraternity that plays a vital role in the preparation of those who plan to teach vocational agriculture. This organization fosters a fraternal spirit among students in teacher-training for vocational agriculture.

Alpha Zeta is an honorary agricultural fraternity. The West Virginia chapter of Alpha Zeta was instituted in the College of Agriculture in 1921. Agriculture and forestry students who have completed three semesters and rank in the upper two-fifths of their respective classes are eligible for membership.

American Society of Agricultural Engineers is a professional society. Students enrolled in the Agricultural Engineering curriculum may become student members. Students in Agricultural Mechanics may join the branch and take active part in its local activities. Its purpose is to encourage professionalism among the student members and to learn about the activities of the parent society. It provides a medium for student participation in Agricultural Engineering activities and functions of mutual interest among branches in all states.

Block and Bridle Club is open to students majoring in animal science or those with an interest in that field. The objectives are: (1) promote high scholastic standards; (2) promote animal sciences; and (3) bring about a close relationship among workers interested in animal science. The club sponsors judging contests, outings, and the Little Eastern National Livestock Show.

Collegiate Chapter of Future Farmers of America provides the student with an opportunity to continue his FFA work and prepare for future service to the organization and to agriculture. It offers opportunities in leadership development and acquaints prospective agricultural leaders with their responsibilities and duties in leading rural youth and adult groups.

Gamma Sigma Delta, the honor society of agriculture, encourages high scholastic attainment and excellence in all branches of agriculture, forestry, and home economics. Outstanding individuals of the senior class, graduate students, faculty, and alumni of all three divisions of the College are elected to membership by the faculty members.

University 4-H Club is sponsored by the 4-H Club Department of the Cooperative Extension Service. Former and present 4-H'ers are invited to join, as well as other college students interested in upholding 4-H ideals. Regular bi-monthly meetings of an educational nature, service projects, and special fun and fellowship activities give real zest to the program.

W.V.U. Dairy Cattle Judging Team is composed of students demonstrating proficiency in the evaluation of conformation of the dairy cow. The Dairy Cattle Judging Team participates in the Eastern Intercollegiate Dairy Cattle Judging Contest at the Eastern States Exposition at Springfield, Massachusetts, and on occasion the National Dairy Cattle Congress at Waterloo, Iowa.

W.V.U. Dairy Products Judging Team is composed of students that have completed the Dairy Products Evaluation Course and are interested in intensive training for a place on the team. The team participates annually in the Southern and the International Contests.

W.V.U. Dairy Science Club was organized for the purpose of bringing together those students interested in furthering their knowledge and experience in the fields of Dairy Production and Dairy Foods. One or more projects and an outing are carried out annually.

W.V.U. Livestock Judging Team is composed of students interested in intensive training in livestock evaluation and selection. Training trips are made to other land-grant colleges in this area, purebred herds, and state sales. The five-man team participates in the Northcentral and Southeastern Intercollegiate judging contests in the spring and the Pennsylvania Farm Show, the Eastern National, and International Intercollegiate contests each fall.

W.V.U. Meat Judging Team is composed of students interested in intensive training in meat judging and grading. Membership on a collegiate meat judging team is a prerequisite for certain jobs with the Livestock Division of the U.S.D.A. The team participates in the Eastern National Intercollegiate Meat Judging Contest at Baltimore, Maryland, and in the International Intercollegiate Meat Judging Contest at Madison, Wisconsin.

W.V.U. Fruit Judging Team is composed of the four top students enrolled in the class on Apple Identification and Judging. The team competes in the Eastern Intercollegiate Fruit Judging Contest held on the campus of one of the member schools in early December each year.

W.V.U. Vegetable Judging Team is composed of students in the class on Vegetable Identification and Judging who compile the best record. The team competes in the National Intercollegiate Vegetable Judging Contest held in conjunction with the annual meeting of the National Vegetable Growers' Association in early December.

W.V.U. Flower Judging Team is selected from the class in Flower Judging. It competes each spring in the National Intercollegiate Flower Judging Contest sponsored by Pi Alpha Xi (Floriculture Honor Society) and the Society of American Florists.

The Forestry Club (W.V.U. Foresters) forms an important part of each forestry student's program. Primarily designed to provide leadership training, its activities include weekly meetings with distinguished foresters as guests, publication of the "Cruiser" (the Foresters' yearbook), intramural sports, dances, and an annual banquet.

A chapter of *Xi Sigma Pi,* national forestry honorary fraternity, was established in the Division of Forestry in 1952. Upperclassmen whose scholarship places them in the upper quarter of their classes may be elected to membership. Through their activities this honorary seeks to maintain high scholastic standards in forestry education.

The Society of American Foresters is a professional society which accepts as members only those persons actually engaged in technical forestry work or studying in preparation for such work. Its objects are "to represent, advance, and protect the interests and standards of the profession of forestry, to provide a medium for exchange of professional thought, and to promote the science, practice, and standards of forestry in America." The West Virginia Chapter was organized in 1945.

The West Virginia University Chapter of the American Home Economics Association seeks to encourage the development of professional attitudes and to increase the knowledge of the contributions which home economists can make to family and community living. Membership is open to all students of home economics at West Virginia University.

Phi Upsilon Omicron is a professional organization for home economics. Its purpose is to establish and strengthen bonds of friendship, promote moral and intellectual development, and to advance home economics. Selection of members is made on their scholastic ability, professional attitude, leadership, judgment, reliability, and spirit of service.

Alpha Omicron Chapter of Omicron Nu received its charter at West Virginia University on May 30, 1952. The purposes of this scholastic honorary in home economics are to recognize young women majoring in home economics for their

scholastic attainment and professional potentialities and to support and encourage research in home economics.

ADVISERS OF STUDENT CLUBS AND ACTIVITIES

Agriclub, H. E. Kidder and O. J. Burger, *Advisers*
Alpha Tau Alpha, R. C. Butler, *Adviser*
Alpha Zeta, O. M. Neal, G. A. Jung, and A. E. Grafton, *Advisers*
American Society of Agricultural Engineers, A. D. Longhouse, *Adviser*
Block and Bridle Club, K. M. Kerr and E. K. Inskeep, *Advisers*
Collegiate Chapter of Future Farmers of America, Warren Kelly, *Adviser*
Gamma Sigma Delta, J. L. McBee, Jr., *President*
University 4-H Club, Betty A. Gum, *Adviser*
W.V.U. Dairy Cattle Judging Team, R. A. Ackerman, *Coach*
W.V.U. Dairy Products Judging Team, S. J. Weese, *Coach*
W.V.U. Dairy Science Club, S. J. Weese, *Adviser*
W.V.U. Flower Judging Team, A. P. Dye, *Coach*
W.V.U. Fruit Judging Team, W. H. Childs, *Coach*
W.V.U. Livestock Judging Team, H. E. Kidder, *Coach*
W.V.U. Meat Judging Team, J. L. McBee, *Coach*
W.V.U. Vegetable Judging Team, *Staff*
The Forestry Club, W. C. Percival, *Adviser*
Xi Sigma Pi, K. L. Carvell, *Adviser*
The Society of American Foresters, Allen Goodspeed, *Adviser*
W.V.U. Chapter of American Home Economics Association, Mary Rose Jones, *Adviser*
Phi Upsilon Omicron, Gladys Ayersman and Ruth Weibel, *Co-Advisers*
Alpha Omicron Chapter of Omicron Nu, Barbara Armstrong, *Adviser*

The Division of Agriculture

FACULTY–DIVISION OF AGRICULTURE

Agricultural Biochemistry

Homer Patrick, B.S., M.S., (University of Missouri, 1939, 1940, Agr., Agr. Chem.), Ph.D., (Pennsylvania State University, 1943, Agr. Biochem.). *Professor and Chairman of Agricultural Biochemistry and Agricultural Biochemist* (1963), 1957.

Wayne Wesley Luchsinger, B.S., M.S., Ph.D., (University of Minnesota, 1951, 1954, 1956, Food Technol., Biochem., Biochem.). *Associate Professor of Agricultural Biochemistry and Associate Agricultural Biochemist* (1963), 1960.

William Gilbert Martin, B.S. (Louisiana Polytechnic Institute, 1956, An. Husb.), M.S. (North Carolina State College, 1958, An. Nutr.), Ph.D. (West Virginia University, 1963, Agr. Biochem.), *Assistant Professor of Agricultural Biochemistry and Assistant Biochemist* (1963), 1958.

Anthony Wayne Richards, B.S. (Salem College, 1962, Chem.), *Assistant in Agricultural Biochemistry* (1963), 1962.

Agricultural Economics

Homer Clark Evans, B.S., M.S. (University of Kentucky, 1947, 1948, Agr. Econ.), Ph.D., (University of Minnesota, 1956, Agr. Econ.), *Professor and Chairman of Agricultural Economics and Agricultural Economist* (1960), 1949.

Alfred Lowell Barr, B.S. (West Virginia University, 1955, Agr.), M.S. (University of Kentucky, 1957, Agr. Econ.), Ph.D., (Oklahoma State University, 1961, Agr. Econ.), *Associate Professor of Agricultural Economics and Associate Agricultural Economist* (1961).

James Harris Clarke, B.S., M.S. (University of Kentucky, 1935, 1937, Agr., Agr. Econ.), *Professor of Agricultural Economics and Agricultural Economist* (1960), 1939.

Robert Irvin Coltrane, B.S., M.S. (North Carolina State College, 1959, 1962, Agr. Educ., Agr. Econ.), *Agricultural Economist, Economic Research Service, United States Department of Agriculture* (1962).

Buddy L. Dillman, B.S., M.S. (University of Arkansas, 1959, 1962), *Agricultural Economist, Economic Research Service, United States Department of Agriculture* (1964).

Robert Lee Jack, B.S., M.S. (West Virginia University, 1958, 1960, Agr. Educ., Agr. Econ.), Ph.D., (Pennsylvania State University, 1963, Agr. Econ.), *Assistant Agricultural Economist and Assistant Professor of Consumer Economics*, (1963).

Herbert Christian Kriesel, B.S. (University of Wisconsin, 1937, Agr. Econ.), *Research Associate* (1962).

Kenneth Dale McIntosh, B.S. (University of Tennessee, 1956, Agr.), M.S. (University of Wisconsin, 1957, Agr. Econ.), *Assistant Professor of Agricultural Economics and Assistant Agricultural Economist* (1963), 1957.

Ralph E. Nelson, B.S., M.S., Ph.D., (University of Minnesota 1949, 1952, 1960), *Associate Professor and Campus Coordinator, East African Programs, Appalachian Center* (1964).

Ernest Joseph Nesius, B.S.A. (Purdue University, 1935, Agr. Educ.), M.S.A. (University of Kentucky, 1937, Farm Econ.), Ph.D. (Iowa State University, 1953, Agr. Econ.), *Professor of Agricultural Economics; Vice President, West Virginia Center for Appalachian Studies and Development; Director, Cooperative Extension Service* (1963), 1960.

Paul Emmett Nesselroad, B.S., M.S. (West Virginia University, 1947, 1955; Agr., Agr. Econ.), *Assistant Professor of Agricultural Economics and Assistant Agricultural Economist* (1963), 1954.

Anthony Leo Pavlick, B.S., M.Ed. (University of Illinois, 1949, 1956, Agr. Educ.), M.S., Ph.D. (University of Minnesota, 1956, 1963, Agr. Econ., Agr. Econ.), *Associate Professor of Agricultural Economics and Associate Agricultural Economist* (1964), 1963.

Vernon Morris Sheppard, Jr., B.S., M.S. (Virginia Polytechnic Institute, 1954, 1960, Agr. Econ.), *Extension Agricultural Economist* (1958). (On Leave of Absence).

James Larkin Stallings, B.S., M.S. (Purdue University, 1952, 1956), Ph.D., (Michigan State University, 1959), *Assistant Agricultural Economist* (1965).

Ronald Lee Stump, B.S. (West Virginia University, 1948, Agr.), *State Extension Economic Development Program Leader* (1962), 1948.

Mary Coddington Templeton, A.B., M.S. (West Virginia University, 1947, 1958, Econ.), *Instructor and Research Assistant* (1965), 1955.

George Eilt Toben, B.S., M.S. (University of Illinois, 1936, 1938; Agr., Agr. Econ.), *Professor of Agricultural Economics and Agricultural Economist* (1960), 1946.

Agricultural Education

Russell Clarke Butler, B.S.Agr., M.S. (West Virginia University, 1930, 1946; Agr'l. Educ. and Dairy Mfg., Agr'l. Educ.), Ph.D. (Cornell University, 1950, Agr'l. Educ.), *Professor and Chairman of Agricultural Education and Professor of Education* (1956), 1944.

Paul V. Armbrester, B.S.Agr., M.S. (West Virginia University, 1951, 1957, Agr'l. Educ.), *Animal Husbandry and Extension Specialist, Arapai Farm Institute, Soroti, Uganda* (1963).

Gene A. Casto, B.S.Agr., M.S. (West Virginia University, 1949, 1953, Agr'l. Educ.), *Assistant Professor of Agricultural Education, Bukalasa Agricultural College, Uganda* (1963).

Warren George Kelly, B.S.Agr., M.S. (West Virginia University, 1943, 1949, Gen. Agr., Agr'l. Educ.), *Assistant Professor of Agricultural Education and Assistant Professor of Education* (1957).

Robert Vaughn Kerwood, B.S.Agr., M.S. (West Virginia University, 1957, 1963, Agr'l. Educ.), *Assistant Professor of Agricultural Education* (1963).

Oliver Claude McGhee, B.S.Agr., M.S. (West Virginia University, 1942, 1949, Agr'l. Educ.), *Assistant Professor of Agricultural Education and Assistant Professor of Education* (1961). (On Leave of Absence).

Dickson Ward Parsons, A.B. (West Virginia University, 1905, Math.), M.S. (University of Wisconsin, 1918, An. Husb.), Ph.D., (Cornell University, 1930, Agr'l. Educ.), *Professor Emeritus of Agricultural Education* (1951), 1923.

Agricultural Engineering

Alfred Delbert Longhouse, B.S., M.S., Ph.D. (Cornell University, 1937, 1938, 1947; Agr., Agr., Agr. Eng'g.), P.E., *Professor and Chairman of Agricultural Engineering and Agricultural Engineer* (1945), 1938.

Waldo E. Bell, B.S.Ag.E. (Pennsylvania State University, 1934), *State Extension Agricultural Engineering Specialist* (1945).

Edmond Byrl Collins, B.S.Ag.E., M.S.Ag.E. (West Virginia University, 1947, 1961), *Assistant Professor of Agricultural Engineering and Assistant Agricultural Engineer* (1962), 1960.

Chester A. Cromer, B.S.Ag.E., M.S.Ag.E. (West Virginia University, 1962, 1964), *Assistant Professor of Agricultural Engineering* (1964). (Assigned to Tanzania Agricultural College, Morogoro, Tanzania, East Africa, through contract with West Virginia University).

Walter Howard Dickerson, B.S.C.E., B.S.Ag.E., M.S.Ag.E. (Virginia Polytechnic Institute, 1935, 1936, 1939), P.E., *Professor of Agricultural Engineering and Agricultural Engineer* (1957), 1953.

Kendall Clark Elliott, B.S.Ag.E. (University of Vermont, 1954), M.S.Ag.E. (West Virginia University, 1961), *Assistant Professor of Agricultural Engineering and Assistant Agricultural Engineer* (1962), 1954.

Roy Eugene Emerson, B.S., M.S. (Cornell University, 1938, 1946; Agr., Agr.), *Associate Professor of Agricultural Engineering and Associate Agricultural Engineer* (1957), 1940.

Glen H. Hetzel, B.S. (West Virginia University, 1962; Agr.), *Instructor in Agricultural Engineering* (1962). (Assigned to Egerton College, Kenya, East Africa, through contract with West Virginia University).

HOMER W. PARKER, B.S. (North Texas State University, 1947; Physics), P.E. (Oklahoma), *Instructor in Agricultural Engineering and Assistant Agricultural Engineer* (1964). (Project Leader, Stationed with Department of Agricultural Engineering in Cooperation with U.S. Forest Service Engineering Research Laboratory).

ROSS ALONZO PHILLIPS, B.S.A., B.S.AG.E. (Ohio State University, 1946, 1947), M.S.AG.E. (University of Missouri, 1952), P.E., *Assistant Professor of Agricultural Engineering and Assistant Agricultural Engineer* (1955).

ARTHUR W. SELDERS, B.S. (West Virginia University, 1959; Agr.); M.S.AG.E. (University of Massachusetts, 1963), *State Extension Agricultural Engineering Specialist* (1963).

GERALD E. THIERSTEIN, B.S.AG.E., M.S.AG.E. (Kansas State University, 1957, 1962), *Assistant Professor of Agricultural Engineering* (1962), (Assigned to Egerton College, Kenya, East Africa, through contract with West Virginia University).

ROBERT O. WEEDFALL, B.S. (University of Chicago, 1942; Meteorology), *Instructor in Agricultural Engineering* (1963). (Climatologist, Stationed with Department of Agricultural Engineering in Cooperation with United States Weather Bureau).

AGRONOMY AND GENETICS

GEORGE GORDON POHLMAN, B.S., M.S., PH.D. (Iowa State College, 1923, 1924, 1930; Agron., Soils, Soils), *Professor and Chairman of Agronomy and Genetics and Agronomist* (1938), 1930.

FREDDIE LEE ALT, B.S.AGR., *Farm Superintendent and Assistant in Agronomy*, (1964).

NEWTON MOORE BAUGHMAN, B.S., M.S. (West Virginia University, 1948, 1950), PH.D. (Purdue University, 1956, Soil Fertility), *Professor of Agronomy and Agronomist; Chief of Party* (assigned to Tanzania Agricultural College, Morogoro, Tanzania, East Africa) (1964), 1949.

OTHMAR JOSEPH BURGER, B.S., M.S., PH.D. (Purdue University, 1943, 1947, 1950; Agron., Agron., Agr. Biochem.), *Assistant Dean of the College of Agriculture, Forestry, and Home Economics and Director of Resident Instruction (Division of Agriculture); Professor of Agronomy* (1959), 1950.

CARL FRANKLIN ENGLE, B.S., M.S., PH.D. (Pennsylvania State University, 1953, 1955, 1963; Agron.), *Assistant Professor of Agronomy and Assistant Agronomist* (1964).

PAUL ROBERT HENDERLONG, B.SC., M.SC. (Ohio State University, 1959, 1961; Agr., Agron.), PH.D. (Virginia Polytechnic Institute, 1964; Agron.), *Assistant Professor of Agronomy and Assistant Agronomist* (1964).

EVERETT MILTON JENCKS, B.S. (University of Rhode Island, 1953, Agr. Chem.), PH.D. (Rutgers University, 1959, Soils), *Assistant Professor of Agronomy and Assistant Agronomist* (1957).

GERALD ALVIN JUNG, B.S., M.S., PH.D. (University of Wisconsin, 1952, 1954, 1958, Agron.), *Associate Professor of Agronomy and Associate Agronomist* (1962), 1958.

FARREL JOHN OLSEN, JR., B.S., M.S. (Utah State University, 1954, 1958, Agron., Plant Breeding), PH.D. (Rutgers University, 1961, Plant Breeding), *Extension Agronomist* (1961).

IGOR V. SARKISSIAN, B.S., M.S. (Michigan State University, 1956, 1957, Farm Crops, Plant Breeding), PH.D. (Purdue University, 1960, Plant Genetics), *Associate Professor of Genetics and Associate Geneticist* (1962).

ARNOLD GERHARD SCHOLTEN, B.S. (University of Alberta, 1957, Soils), M.S., PH.D. University of Wisconsin, 1959, 1964, Soils), *Assistant Professor of Agronomy* (assigned to Bukalasa Agricultural College, Bombo, Uganda, East Africa) (1965).

GEORGE SHARPE, B.S., M.S. (West Virginia University, 1929, 1931, Gen. Agr., Entomol.), *State Extension Soil Conservation Specialist* (1944), 1929.

CHARLES B. SPEROW, B.S., M.S. (West Virginia University, 1952, 1958, Agron.), *Assistant Agronomist in Charge*, Ohio Valley Experiment Farm, Pt. Pleasant (1957), 1952.

SIEGBERT AUGUST THIES, B.S., M.S. (Oklahoma State University, 1951, 1953, Agr. Educ., Agron.), *Assistant Professor of Agronomy* (assigned to Tanzania Agricultural College, Morogoro, Tanzania, East Africa) (1964).

VALENTIN ULRICH, A.B., PH.D. (Rutgers University, 1953, 1960, Biol., Genetics), *Associate Professor of Genetics and Associate Geneticist* (1962), 1957.

WILLEM ADOLPH VAN ECK, B.S. (University of Wageningen, Netherlands, 1951, Tropical Forestry), M.S., PH.D. (Michigan State University, 1954, 1958, Soil Sci.), *Associate Professor of Agronomy and Associate Agronomist* (1956).

COLLINS VEATCH, B.S. (Virginia Polytechnic Institute, 1926, Agron.), M.S. (Iowa State College, 1926, Plant Breeding), PH.D. (University of Illinois, 1929, Plant Physiol.), *Professor of Agronomy and Agronomist* (1959), 1945.

ANIMAL INDUSTRY AND VETERINARY SCIENCE

MARVIN RICHARD MCCLUNG, B.S.AGR. (West Virginia University, 1941, An. Husb.), M.S. (University of Maryland, 1942, Poultry Breeding), PH.D. (Iowa State University, 1953, An. Breeding, Genet. and Statistics), *Professor and Chairman Animal Industry and Veterinary Science and Animal Scientist* (1964), 1942.

RICHARD ATKINS ACKERMAN, B.S. (University of Connecticut, 1928, Dairy Husb.), M.S. (West Virginia University, 1930, Dairy Husb.), *Assistant Professor of Dairy Science and Assistant Dairy Scientist* (1946), 1928.

ROBERT OLIN ADAMSON, B.S.AGR. (West Virginia University, 1964, An. Husb.), *State Extension Specialist—Animal Husbandry* (1964).

GERALD CLIFTON ANDERSON, B.S. (University of Massachusetts, 1943, An. Husb.), M.S., PH.D. (University of Missouri, 1948, 1950, An. Nutr.), *Professor of Animal Science and Animal Husbandman* (1954), 1950.

PAUL VERNON ARMBRESTER, B.S., M.S., *Instructor in Animal Extension Methods* (1963). (Assigned to Arapai, Uganda).

CHARLES BURTON BOYLES, B.S., M.AGR. (West Virginia University, 1950, 1959, An. Husb., Agr.), *Instructor in Animal Science and Superintendent of Department Farm* (1959), 1955.

CORNELIUS JETT CUNNINGHAM, SR., B.S.AGR. (Virginia Polytechnic Institute, 1932, An. Husb.), *Animal Husbandman in Charge,* Reymann Memorial Farms (P.O., Wardensville), (1943).

LESLIE DOZSA, D.V.M. (College of Vet. Med. and Agr., Budapest, 1946, Vet. Med.), *Associate Professor of Veterinary Science and Associate Animal Pathologist* (1961), 1957.

ROBERT STANDISH DUNBAR, JR., B.S.AGR. (University of Rhode Island, 1949, An. Husb.), M.S., PH.D. (Cornell University, 1950, 1952, An. Breeding and Dairy Husb.; An. Breeding, Genet., and Statistics), *Professor of Animal Science; Dean of College of Agriculture, Forestry, and Home Economics* (1964), 1952.

WILBUR DYE, B.S., M.S. (West Virginia University, 1950, 1957, Agr., An. Husb.), *Instructor in Animal Science* (1964), 1950. (Assigned to Tanzania Agricultural College, Morogoro, Tanzania).

JOSEPH C. EMCH, B.S. (West Virginia University, 1947, Agr.), M.S. (Oklahoma State University, 1952, An. Husb.), *State Extension Animal Husbandry Specialist* (1957), 1947.

JACK MOORE GAY, B.S. (West Virginia University, An. Husb.), M.S. (University of Kentucky, 1961, An. Husb.), *Instructor in Veterinary Science* (1964). (Assigned to Bukalasa Agricultural College, Bukalasa, Uganda.

ROBERT L. GAY, B.S., (West Virginia University, 1960, An. Husb.), D.V.M. (Ohio State University, 1964), *Instructor in Veterinary Science* (1964), (Assigned to Arapai Agricultural College, Arapai, Uganda).

TED ROBERT HASH, B.S. (Virginia Polytechnic Institute, 1933, Agr. Educ.), *State Extension Poultry Specialist* (1947), 1937.

JAMES O. HEISHMAN, B.V.Sc., V.S. (Ontario Veterinary College, 1934, Vet. Med.), *Associate Animal Pathologist,* Reymann Memorial Farms (P.O., Wardensville), (1949).

DONALD JAMES HORVATH, B.S., M.S. (Rutgers, 1951, 1954, Agr., An. Husb.), PH.D. (Cornell, 1957, An. Nutr.), *Associate Professor of Animal Science and Associate Animal Husbandman* (1960), 1957.

HAROLD MARTENEY HYRE, B.S. (West Virginia University, 1930, Agr. Educ. and Poult. Sci.), M.S. (Cornell University, 1931, Poult Sci.), *Associate Professor of Poultry Science and Associate Poultry Scientist* (1944), 1931.

EMMETT KEITH INSKEEP, B.S.AGR. (West Virginia University, 1959, An. Husb.), M.S. (University of Wisconsin, 1960, Genet.), PH.D. (University of Wisconsin, 1964, Endocrinology), *Assistant Professor of Animal Science and Assistant Animal Scientist* (1964).

CLYDE EDGAR JOHNSON, JR., B.A., M.S. (West Virginia University, 1957, 1959, Zool.), *Instructor in Dairy Science* (1960).

JOHN ROBERT JOHNSON, B.S. (West Virginia University, 1960, Agr.), M.A. (West Virginia University, 1962, Poult. Sci.), *Research Assistant* (1962).

KIRKLYN MCNEER KERR, B.S. (West Virginia University, 1961, An. Husb.), D.V.M. (Ohio State University, 1961, Vet. Med.), *Research Associate in Veterinary Science* (1962).

HAROLD EDWARD KIDDER, B.S. (Colorado State University, 1950, An. Husb.), M.S., PH.D. (University of Wisconsin, 1951, 1954, Genetics; Genetics and Dairy Sci.), *Professor of Animal Science and Animal Husbandman* (1960), 1954.

JAMES LEONARD MCBEE, JR., B.S., M.S. (West Virginia University, 1952, 1956, An. Husb.), PH.D. (University of Missouri, 1959, Meat Technol.), *Associate Professor of Animal Science and Associate Animal Husbandman* (1964), 1959.

GEORGE AIKEN MCLAREN, B.S. (University of Virginia, 1935, Chem. and Biol.), M.S. (Fordham University, 1955, An. Nutr. and Biochem.), PH.D. (Oklahoma State University, 1955, An. Nutr. and Biochem.), *Professor of Animal Science and Nutritionist* (1959), 1955.

BYRON WAYNE MOORE, B.S. (West Virginia University, 1935, Agr. Educ.), *State Extension Poultry Specialist* (1955), 1947.

WILLIAM LAURUS NORTHERN, B.S. (North Carolina State College, 1950, Dairy Husb.), M.A. (West Virginia University, 1956, Gen. Agr.), *State Extension Dairy Specialist* (1956), 1951.

NORMAN OLAF OLSON, B.S., D.V.M. (Washington State College, 1938, Vet. Med.), *Professor of Veterinary Science and Veterinarian* (1964), 1948.

ROBERT LESLIE REID, B.S., B.AGR. (Queens University, Belfast, 1950, 1951, Chem.; Agr. Chem.), PH.D. (Aberdeen University, 1957, Agr. Biochem. and Nutr.), *Associate Professor of Animal Science and Associate Nutritionist* (1964), 1957.

JOHN HARRISON RIETZ, D.V.M., M.SC. (Ohio State University, 1903, 1929, Vet. Med.; Parasitology), *Professor Emeritus of Veterinary Science and Animal Pathologist Emeritus* (1948), 1927.

JOHN ROBERT SCHABINGER, B.S.AGR. (University of Delaware, 1943, An. Sci.), M.S. (Pennsylvania State University, 1947, Dairy Sci.), PH.D. (North Carolina State, 1964, An. Breeding, Dairy Sci.), *Area Extension Specialist—Dairy Science* (1964).

PAUL MORROW SMITH, B.S. (Pennsylvania State University, 1956, Dairy Sci.), *Instructor in Dairy Science* (1959).

ROBERT HAMILTON THOMAS, B.S., M.A. (University of Missouri, 1946, 1948, Dairy Mfg.), PH.D., (Iowa State College, 1953, Food Technol. and Dairy Chem.), *Associate Professor of Dairy Science and Associate Dairy Scientist* (1958).

ROY O. THOMAS, B.S.AGR. (Berea College, 1946), M.S. (University of Tennessee, 1952, Dairying), PH.D. (Michigan State University, 1964, Nutr., Biochem., Physiol.), *Assistant Professor of Dairy Science and Assistant Dairy Scientist* (1964).

BENJAMIN W. WAMSLEY, JR., B.S., M.S. (West Virginia University, 1948, 1963, Agr.), *State Extension Animal Husbandry Specialist* (1957), 1948.

SAMUEL JOSEPHUS WEESE, B.S., M.A. (West Virginia University, 1929, 1941, Dairy Mfg., Gen. Agr.), *Associate Professor of Dairy Science and Associate Dairy Scientist* (1951), 1945.

JAMES ALEXANDER WELCH, B.S. (University of Kentucky, 1947, An. Husb.), PH.D. University of Illinois, 1952, Physiology of Reproduction), *Professor of Animal Science and Animal Husbandman* (1960), 1952. (Assigned to Veterinary Training Institute, Entebbe, Uganda).

FRANK ERNEST WOODSON, B.S. (West Virginia University, 1958, An. Husb.), D.V.M. (Ohio State University, 1962, Vet. Med.), *Assistant Professor of Veterinary Science* (1963). (Assigned to Veterinary Training Institute, Entebbe, Uganda).

HORTICULTURE

Eion George Scott, B.Sc. (University of Glasgow, 1954, Bot.), Ph.D. (University of California at Davis, 1958, Plant Physiol.), *Professor and Chairman of Horticulture and Horticulturist* (1962).

William Henry Childs, B.S., M.S. (University of Illinois, 1930, 1931, Hort.), Ph.D. (Cornell University, 1940, Pomology), *Professor of Horticulture and Horticulturist* (1953), 1931.

Clifford Warthen Collier, Jr., B.F.A., M.L.A. (University of Georgia, 1949, 1960, Stage Scenery and Design; Landscape Arch.), *State Extension Landscape Architect* (1960).

Arthur Pincree Dye, B.S., M.S. (West Virginia University, 1923, 1927, Hort.), *Associate Professor of Horticulture and Associate Horticulturist* (1962), 1923.

William Robert Fortney, B.S., M.S. (University of Illinois, 1949, 1951, Floriculture; Plant Breeding and Genet.), Ph.D. (Purdue University, 1958, Plant Breeding and Genet.), *Associate Professor of Horticulture and Associate Horticulturist* (1960), 1956.

Nestor Carl Hardin, Jr., B.S., M.S. (West Virginia University, 1949, 1961, Gen. Agr., Hort.), *State Extension Specialist—Horticulture* (1964), 1958.

Clinton Elliot Hickman, B.S., M.S. (West Virginia University, 1962, 1964, Agr., Hort.), *Assistant Horticulturist* (1964), 1962.

Luther Morris Ingle, A.B. (University of California at Santa Barbara, 1951), M.A., (University of California, Davis, 1956, Bot.), Ph.D., (Purdue University, 1960, Plant Physiol.), *Assistant Professor of Horticulture and Assistant Horticulturist* (1963).

Ray Stanley Marsh, B.S., A.M. (University of Missouri, 1921, 1922, Hort.), *Professor Emeritus of Horticulture and Horticulturist Emeritus* (1965), 1936.

Oliver Meader Neal, Jr., B.S. (University of Maine, 1938, Bot.), Ph.D. (Michigan State University, 1956, Hort.), *Professor of Horticulture and Horticulturist* (1963), 1942.

Oscar Edmund Schubert, B.S. (West Virginia University, 1942, Hort.), M.S., Ph.D. (University of Illinois, 1947, 1949, Floricult., Pomology), *Professor of Horticulture and Horticulturist* (1961), 1949.

LeRoy Paul Stevens, B.S., M.S. (West Virginia University, 1961, 1962, Agr., Hort.), *Assistant Horticulturist and Farm Superintendent, Reedsville Experiment Farm* (1964), 1960.

Glenn Edward Steyers, B.S., M.S. (Pennsylvania State University, 1952, 1954, Landscape Arch.), *Associate Professor of Horticulture and University Landscape Architect* (1960).

Kyle Chester Westover, B.S. (University of New Hampshire, 1917, Hort.), M.S. (West Virginia University, 1925, Hort.), Ph.D. (Cornell University, 1936, Plant Physiol.), *Professor Emeritus of Horticulture and Horticulturist Emeritus* (1963), 1921.

PLANT PATHOLOGY, BACTERIOLOGY, AND ENTOMOLOGY

Horace Leslie Barnett, A.B. (DePauw University, 1931, Bot. and Math.), M.S. (North Dakota Agricultural College, 1933, Bot.), Ph.D. (Michigan State University, 1937, Mycol.), *Chairman of Plant Pathology, Bacteriology, and Entomology, and Professor of Mycology and Mycologist* (1960), 1945.

Robert Evans Adams, B.S., Ph.D. (Cornell University, 1949, 1953, Hort. and Plant Path.; Plant Path.), *Associate Professor of Plant Pathology and Associate Plant Pathologist* (1960), 1953.

Joseph G. Barratt, M.S. (University of Rhode Island, 1951, Bot.), Ph.D. (University of New Hampshire, 1958, Bot. and Plant Path.), *State Extension Spray Specialist* (1958).

Carl Kester Dorsey, A.B. (Westminister, Mo., College, 1933, Gen. Sci.), M.S. (University of Illinois, 1936, Entomol.), Ph.D. (University of Maryland, 1941, Entomol.), *Professor of Entomology and Entomologist* (1952).

John Junior Eichenmuller, A.B., M.S. (West Virginia University, 1948, 1949, Bot.), *Assistant in Plant Pathology* (1952).

EDWARD SUMNER ELLIOTT, A.B., M.S., PH.D. (West Virginia University, 1941, 1948, 1950; Bot., Plant Path., Plant Path.), *Associate Professor of Plant Pathology and Associate Plant Pathologist* (1961), 1953.

MANNON ELIHU GALLEGLY, JR., B.S.A. (University of Arkansas, 1945, Gen. Agr.), M.S., PH.D. (University of Wisconsin, 1946, 1949, Plant Path.), *Professor of Plant Pathology and Plant Pathologist* (1960), 1949.

EDWIN GOULD, B.S. (West Virginia University, 1928, Entomol. and Bot.), *Entomologist in Charge,* University Experiment Farm, Kearneysville (1946), 1929.

JOHN A. KOBURGER, B.S., M.S. (Kansas State University, 1959, 1960, Dairy Mfg.), PH.D. (North Carolina State College, 1962, Dairy Bact.), *Assistant Professor of Bacteriology and Assistant Bacteriologist* (1962).

JULIAN GILBERT LEACH, B.S.A. (University of Tennessee, 1917, Bot.), M.S., PH.D. (University of Minnesota, 1918, 1922, Plant Path.), *Professor of Plant Pathology and Plant Pathologist* (1960), 1938.

VIRGIL GREENE LILLY, A.B. (Pacific University, 1926, Chem.), M.A., PH.D. (West Virginia University, 1929, 1932, Chem.), *Professor of Physiology and Physiologist* (1949), 1927.

WILLIAM WALLACE NEEL, A.B. (Emory University, 1940, Biol.), M.S. (University of Florida, 1949, Entomol.), PH.D. (Texas A. & M. College, 1954, Entomol.), *Assistant Professor of Entomology and Assistant Entomologist* (1963).

DAVID OLIVER QUINN, A.B. (Drew University, 1951, Bot.), M.S. (West Virginia University, 1956, Plant Path.), *State Extension Plant Pathology and Entomology Specialist* (1956).

RODNEY PHILIP TRUE, A.B., PH.D. (University of Pennsylvania, 1929, 1934, Bot.; Forest Path. and Bot.), *Professor of Plant Pathology and Plant Pathologist* (1955), 1949.

HAROLD ALBERT WILSON, B.S., M.S. (Louisiana State University, 1932, 1933, Bot. and Bact.; Bact.), PH.D. (Iowa State College, 1937, Soil Bact.), *Professor of Bacteriology and Bacteriologist* (1957), 1947.

Requirements for the Degrees

The Division of Agriculture offers courses of study to prepare the student for opportunities in science, business, and industry.

Students who enroll in the Division of Agriculture may study in a wide range of major interests, such as:

Animal and Veterinary Science which includes animal biology, animal breeding, animal nutrition, animal physiology, animal production, food science, and pre-veterinary medicine.

Agricultural Biochemistry.

Agricultural Education which includes teaching of vocational agriculture as well as biological sciences.

Agricultural Engineering and Agricultural Mechanics.

Soil Science which includes soil conservation.

Crop Science.

Genetics.

Horticulture which includes pomology, olericulture, and ornamental horticulture.

Landscape Architecture.

Agricultural Business.

Bacteriology.

Entomology.

Plant Pathology.

The degrees and programs of study offered in the Division of Agriculture are:

1. Degree of Bachelor of Science (B.S.)
2. Degree of Bachelor of Science in Agriculture (B.S.Agr.)
3. Degree of Bachelor of Science in Agricultural Engineering (B.S.Agr.E.)
4. Degree of Bachelor of Science in Landscape Architecture (B.S.L.A.)
5. Curriculum in Pre-Veterinary Medicine

Students interested in obtaining proficiency in agriculture, scientific writing and journalism, while acquiring extensive knowledge in agriculture, should consult the School of Journalism section of this bulletin.

DEGREE OF BACHELOR OF SCIENCE

This program of study is primarily designed for students who plan to pursue an advanced degree in preparation for careers in teaching and research.

To qualify for this degree the student must complete all courses listed in the Foundation Curriculum, and must complete the program listed under the Basic Science Option of the Additional Requirements, page 75.

DEGREE OF BACHELOR OF SCIENCE IN AGRICULTURE

This program of study is designed for students who desire maximum specialization in the broad aspects of the ag-industrial complex; namely, business, industry, education, or farming.

The student may qualify for this degree by completing all courses listed in the Foundation Curriculum, and must complete the programs listed under any of three options; namely, Applied Science, Business, and Education of the Additional Requirements, page 75.

THE FOUNDATION CURRICULUM*

*(Required In All Options)***

	Hr.
Introduction to Agriculture	
Agriculture 11—Professions in Agriculture	1
Agriculture 12—Professions in Agriculture	1
Agricultural Science	
Animal Industry and Veterinary Science 51—Principles of Animal Science	4
Agriculture 52—Principles of Plant Science	4
Agronomy 2—Principles of Soil Science	4
Agricultural Engineering 10—Principles of Agricultural Engineering	3
Economics	
Economics 51—Principles of Economics	3
Agricultural Economics 103—Agricultural Economics	3
Communication Skills	
English 1—Composition and Rhetoric	3
English 2—Composition and Rhetoric	3
Speech 11—Public Speaking *or* Speech 3, Voice and Diction	3
Physical Science and Mathematics	
Chemistry 1—Inorganic Chemistry	4
Chemistry 2—Inorganic Chemistry	4
Physics 1—Introductory Physics	4
Mathematics 3—College Algebra	3
Mathematics 4—Trigonometry	3
Biological Science	
Botany 1—General Botany	4
Zoology 2—General Zoology	4
TOTAL	58

All courses listed in the Foundation Curriculum are required of all students and should be completed with a passing grade before reaching the fourth-year status of 100 hours. Courses within this category not completed before the student attains fourth-year status still must be passed but the hours will not then count toward the total needed for graduation. Exceptional cases will be handled by the Dean.

*Courses of Instruction in the Division of Agriculture may be found beginning on page 79.

**Students must select one of the four options listed on page 75 prior to their third semester of enrollment. Transfer students must make their selection prior to their second registration in the Division of Agriculture.

Additional Requirements to the Foundation Curriculum

(Hours Required By Options in Agriculture)

Subject Matter Area	Applied Science Option	Basic Science Option	Business Option	Education Option	Courses For Selection*
Arts and Humanities (Group A)	12	12	12	12	University Core Requirements
Behavioral and Social Sciences (Group B)	6**	6**	6**	6**	University Core Requirements
Biological Sciences	8	10	0	4	Botany, Zoology, Pathology, Biochemistry, Bacteriology, Genetics, Entomology, Physiology, Biology.
Mathematics	0	4	0	0	Math. 15
Physical Science and Mathematics	4	12†	0	0	Mathematics, Chemistry, Physics, Geology, Surveying
Accounting	0	0	4	0	Agr. Econ. 110
Business and Economics	0	0	12	0	A minimum of 9 hr. in the College of Commerce. The remaining 3 hr. from either Commerce or Agr. Econ.
Agriculture‡	30	20	30	31	Courses in the College of Agr., For., and Home Econ. Business majors must have a minimum of 9 hr. of Agr. Econ.
Education and Agricultural Education	0	0	0	21	Minimum hours required for Teacher Certification in Vocational Agriculture.
Physical Education, Military, or Air Science or Free Electives	10	10	10	10	
Free Electives	16	12	12	2	
TOTAL	86	86	86	86	

*Credits submitted to meet the requirements in one subject-matter area cannot be used to satisfy requirements in another subject-matter area.

**Economics 51 and Agr. Econ. 103 in the Foundation Curriculum will contribute 6 hours to all options making a required total of 12 hours.

†Chem. 233, Organic Chemistry, and Physics 2, Introductory Physics, are required in the Basic Science Option.

‡Courses of Instruction in Agriculture may be found beginning on page 79.

Suggested Agriculture Curriculum

FRESHMAN YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
*Agr. 11	1	*Agr. 12	1
*English 1	3	*English 2	3
*Bot. 1	4	*Zool. 2	4
*Chem. 1 *or* Elective	3-4	*Math. 4	3
*Math. 3	3	*Chem. 2 *or* Chem. 1	4
Phys. Ed. 1	1	Phys. Ed. 2	1
Mil. or Air Sci. 1	2	Mil. or Air Sci. 2	2
	17-18		18

SOPHOMORE YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
*Econ. 51	3	*Agr. Econ. 103	3
*Chem. 2 *or* Elective	3-4	*Agron. 2	4
*Agr. Eng. 10	3	*Agr. 52	4
*AI & VS 51	4	Elective (Group A, B, or C, University Core)	3-4
*Speech 11 *or* Speech 3	3	Mil. or Air Sci. 4	2
Mil. or Air Sci. 3	2		
	18-19		16-17

JUNIOR YEAR

First Sem.	*Hr.*
*Physics 1	4

*Courses marked with an asterisk are required for all students in Agriculture, and they should be completed satisfactorily before reaching fourth-year status of 100 hours. Courses within this category not completed before the student attains fourth-year status still must be satisfactorily completed but the hours will not then count towards the total needed for graduation. Exceptional cases will be handled by the Dean. Physics 2 may be required in the Education option.

NOTE: It may be necessary for some students to take English 0 and Math. 2. Such changes in the curriculum schedule may be made with only slight reorganization.

In addition to the curriculum schedule, the student in the junior and senior years must take additional courses in various subject-matter areas to qualify for the Bachelor's Degree in one of four options in Agriculture (see page 75).

DEGREE OF BACHELOR OF SCIENCE IN AGRICULTURAL ENGINEERING

(E.C.P.D. ACCREDITED)

Agricultural Engineering is the application of engineering principles to agriculture. Success in the application of these engineering fundamentals to the agricultural industry requires knowledge of both biological and physical sciences. The purpose of the course is to give the student who completes it general training in agriculture and in engineering fundamentals. Considerable stress is given to the basic requirements of animal and plant life on the farm which affect engineering practices, but greater emphasis is made on a thorough knowledge of those underlying principles and methods which are the foundation of all engineering professions.

Although the curriculum gives no opportunity for specialization, Agricultural Engineering is made up of four major fields. These are Farm Power and Machinery, Farm Structures, Soil and Water Conservation, and Electric Power and Processing.

Students preparing to take Agricultural Engineering should present for entrance as many units as possible in mathematics, chemistry, and physics.

Some of the organizations and industries employing agricultural engineers are electric power companies and co-operatives; farm machinery manufacurers and distributors; manufacturers and distributors of building materials; oil companies; electric equipment and other suppliers for farm utilities; trust companies; farm management agencies; federal agencies such as Soil Conservation Service, U. S. Department of Agriculture, Federal Land Bank, and Indian Service; colleges and universities; Army and Navy, and foreign governments.

Opportunities for employment are numerous. At no time since the establishment of the profession has it been crowded, and the outlook is good for a continuance of this situation. With agriculture becoming increasingly mechanized, the demand for agricultural engineers is increasing and should continue to increase. New opportunities arise as mechanization continues. Starting salaries are in line with salaries in other branches of engineering.

Curriculum in Agricultural Engineering

FIRST YEAR				SECOND YEAR			
First Sem.	*Hr.*	*Second Sem.*	*Hr.*	*First Sem.*	*Hr.*	*Second Sem.*	*Hr.*
English 1	3	English 2	3	Ag.Eng. 10	3	Physics 124	4
Chem. 1	4	Chem. 2	4	Physics 102	4	Math. 253	3
Math. 15	4	Math. 116	4	Math. 117	4	T.A.M. 102	3
M.E. 20	3	Physics 11	4	T.A.M. 101	3	Econ. 52	3
Mil. or Air Sci. 1	2	Mil. or Air Sci. 2	2	Econ. 51	3	M.E. 121	3
Phys. Ed. 1	1	Phys. Ed. 2	1	Mil. or Air Sci. 3	2	Mil. or Air Sci. 4	2
	17		18		19		18

THIRD YEAR				FOURTH YEAR			
First Sem.	*Hr.*	*Second Sem.*	*Hr.*	*First Sem.*	*Hr.*	*Second Sem.*	*Hr.*
M.E. 126	2	C.E. 115	3	Ani. Sci. 51 *Or*		Ag.Eng. 100	3
E.E. 105	4	E.E. 205	4	Agr. 52	4	Ag.Eng. 210	3
T.A.M. 103	3	C.E. 1	2	Ag.Eng. 230	3	Ag.Eng. 190	3
T.A.M. 104	3	M.E. 109	2	Ag.Eng. 250	3	Rural Sociol. 105	3
Humanities 1	3	Humanities 2	3	M.E. 201	3	Electives	6
English 126 *Or*		Agron. 2	4	Agr. Econ.			
Speech 11	3			Electives*	3-2		
				Electives	3-4		
	18		18		19		18

*Agricultural Economics electives must be chosen from Agr. Econ. 240, 261, or 271.

DEGREE OF BACHELOR OF SCIENCE IN LANDSCAPE ARCHITECTURE

This program prepares students for the career of a professional landscape architect. Training is provided in the technical skills of drawing, drafting, and creation of topographical grading plans, construction details, planting plans, and estimates. Basic design courses in art, architecture, and landscape architecture develop skills necessary in the planning of outdoor areas for the fitting of man's environment to his appropriate use.

Professional landscape architects are qualified for positions in public and private employment, including civil service programs, in the many phases of site planning and design, and for collaboration with other planning professions in the development of land areas. Wherever people require development for living, working, and recreation, the services of the professional landscape architect are essential.

Curriculum in Landscape Architecture

FIRST YEAR				SECOND YEAR			
First Sem.	*Hr.*	*Second Sem.*	*Hr.*	*First Sem.*	*Hr.*	*Second Sem.*	*Hr.*
English 1	3	English 2	3	Hort. 160	3	Hort. 161	3
L.A. 10	4	L.A. 21	4	Math. 4	3	L.A. 26	3
Art 11	3	Art 12	3	L.A. 25	3	Bot. 266	3
Bot. 1	4	L.A. 12	3	C.E. 5	4	Electives	8
Phys. Ed. 1	1	Math. 3	3	Electives	4	Mil. or Air Sci. 4	2
Mil. or Air Sci. 1	2	Phys. Ed. 2	1	Mil. or Air Sci. 3	2		
		Mil. or Air Sci. 2	2				
	17		19		19		19

SUMMER BEFORE FOURTH YEAR

L.A. 62 0

THIRD YEAR				FOURTH YEAR			
First Sem.	*Hr.*	*Second Sem.*	*Hr.*	*First Sem.*	*Hr.*	*Second Sem.*	*Hr.*
L.A. 131	3	L.A. 132	3	L.A. 265	3	L.A. 272	5
L.A. 142	4	L.A. 145	4	L.A. 270	5	L.A. 278	4
L.A. 146	3	L.A. 147	2	L.A. 276	3	L.A. 284	2
Hort. 162	3	L.A. 148	3	L.A. 282	2	Electives	6
Electives	6	Electives	6	Electives	3		
	19		18		16		17

TOTAL: 144 hours

CURRICULUM IN PRE-VETERINARY MEDICINE

West Virginia University has an arrangement with Oklahoma State University through the Southern Regional Education Board and with Ohio State University whereby each institution will accept up to four students annually into their Colleges of Veterinary Medicine. In order to qualify for these positions the students must be West Virginia residents.

Applicants for admission to these Colleges of Veterinary Medicine must present not less than 60 semester hours of acceptable credit. Hours earned in military science or aerospace studies or physical education or survey courses are not counted. Since only eight eligible applicants are accepted each year, alternate goals in standard B.S. degree programs are urged for all pre-professional students. The equivalent for the following professional courses is required of all applicants for admission without condition to the Ohio or Oklahoma Colleges of Veterinary Medicine.

	Semester Hours
Agricultural Survey	2
English and Speech	9
Chemistry	12
Chemistry (Organic)	4
Zoology and Botany	12
Mathematics	3
Physics	8
Humanities and Social Science*	12
Animal Industry and Veterinary Science**	10
Total	72

Applicants with a grade-point average of 2.5 or above will be given first consideration for admission to these institutions.

*Students applying to Oklahoma State must include a three-credit course in American National Government and a three-credit course in American History.

**Animal Nutrition and Animal Genetics may be taken at Oklahoma State during the second year of Veterinary Medicine.

Courses of Instruction

ASSIGNED TOPICS

In order to be eligible to take courses 180, Assigned Topics, the student must:

1. Have completed 100 hours of work and have a grade-point average of 2.5 or above.
2. Present, in advance, a written outline of the work to be done as an assigned topic. This outline must be acceptable to the department chairman concerned and the Dean of the College.

Item 1 above does not apply to special students.

A student may not receive credit toward graduation for more than 4 hours of Assigned Topics.

AGRICULTURE

11. Professions in Agriculture. I. 1 hr. Survey of the subject-matter disciplines and of the career opportunities available to students in the Division of Agriculture.

12. Professions in Agriculture. II. 1 hr. Continuation of Agr. 11.

52. Principles of Plant Science. II. 4 hr. PR: Bot. 1. Basics of the nature, history, classification, role, distinction, structure and function, reproduction, improvement, culture, pests, storage and handling, production and marketing, and utilization of agricultural plants.

STATISTICS

101. Statistical Concepts. II. 3 hr. An elementary course designed to thoroughly familiarize the student with the basic concepts of the distribution of a variable, sampling error, probability, and statistical inference. This course emphasizes the basis for statistical reasoning rather than the mechanics of a number of statistical techniques.

211. Statistical Methods. I. 3 hr. Statistical concepts and methods applied to data in biological and other fields. Measures of centrality and dispersion; normal distribution; population and sampling; estimation and tests of hypotheses concerning means and variances, analysis of variance, regression and correlation; enumeration statistics.

212. Advanced Statistical Methods. II. 3 hr. PR: Statistics 211 or equiv. Continuation of Statistics 211. Statistical concepts and methods. Analysis of variance with two or more variables; factorial comparisons; covariance analysis; multiple regression and correlation; and nonlinear regression.

238. Statistical Quality Control. II. 3 hr. PR: Econ. 125 or Statistics 101 or equiv. A study of statistical quality control.

AGRICULTURAL BIOCHEMISTRY

Chemistry and biochemistry courses are also offered in the College of Arts and Sciences and the School of Medicine.

*180. Assigned Topics. I, II, S. 1-4 hr.

202. Introductory Plant and Animal Biochemistry. II. 3 hr. PR: Chem. 1 and 2, Chem. 31 or 131 or equiv. An introductory course of the biochemistry of carbohydrates, proteins, lipids, vitamins, enzymes, minerals, and hormones of plants and animals.

203. Introductory Biochemistry Lab. II. 1 hr. Experiments to demonstrate certain phases of the subject matter covered in Agr. Biochem. 202. Also, the use of modern instruments for biochemistry will be taught.

*See above.

212. Principles of Biological Radionuclide Science. S. 3 hr. This course is designed for high school science teachers and deals with the handling and usage of radionuclides in research, both for peaceful and wartime uses.

214. Biological Radionuclide Methods. I. 3 hr. PR: Chem. 1, 2, 131, or consent. Radionuclide methods and isotope handling as needed by students interested in biological research. Offered in Fall of even years.

290. General Biochemistry. I. 3 hr. PR: Chem. 238, quantitative analysis and consent. A general course in biochemistry primarily intended to meet the needs of graduate students.

291. General Biochemistry. II. 3 hr. PR: Agr. Biochem. 290 or consent. A continuation of Agr. Biochem. 290.

293. Laboratory Experiments in Biochemistry. I. 2 hr. PR or conc: Agr. Biochem. 290. Experiments to demonstrate certain phases of the subject matter covered in General Biochemistry.

AGRICULTURAL ECONOMICS

103. Agricultural Economics. I and II. 3 hr. PR: Econ. 51. Application of economic principles to agriculture and agri-business firms. Agriculture's place in the state and national economies and its position in the international sphere. Credit is not given for both Agr. Econ. 103 and Econ. 52. Agr. Econ. 103 is prerequisite for upper-division courses in Agricultural Economics and the College of Commerce.

104. Farm Management. I. 3 hr. PR: Agr. Econ. 103. Types and systems of farming; considerations in starting farming; use of records in solving farm problems; land tenure and leases; production for family use.

110. Agri-business Accounting. I. 4 hr. Accounting for business managers who do not intend to become accountants. A brief coverage of terminology and methodology; decisions in accounting as directed by executives; interpretations and values from accounts and accounting statements. Visits to business firms required.

131. Marketing Agricultural Products. II. 3 hr. PR: Agr. Econ. 103. Market organization, market policies and practices and factors affecting the marketing of agricultural products. Tour of market agencies and facilities in Pittsburgh area required.

*180. Assigned Topics. I, II, S. 1-4 hr.

200. Land Economics. II. 3 hr. Classification, development, tenure, use, conservation, valuation and taxation of rural, urban, mineral, forest, water, and recreational land resources.

206. Farm Planning. I. 3 hr. PR: Senior standing. Principal factors influencing returns on farms; planning use of labor, soil, crops, livestock, buildings and equipment. Farm visits required.

230. Cooperative Marketing. II. 2-3 hr. PR: Agr. Econ. 103. Principles and practices of cooperation as applied to marketing of agricultural products and purchasing of farm supplies. Offered in Spring of even years.

235. Marketing Dairy Products. II. 2 hr. PR: Agr. Econ. 103. Milk-marketing policies and practices, including federal milk-market orders. Offered in Spring of odd years.

240. Agricultural Prices. II. 3 hr. Price-making forces which operate in the market places for the major agricultural commodities.

*See page 79.

261. Agri-business Finance. I. 3 hr. Credit needs of agricultural businesses; financing of farm and market-agency firms; and organization and operation of credit agencies which finance agricultural business firms.

271. Agricultural Policy. II. 3 hr. The economic aspects of government price programs, production and marketing controls, subsidies, parity, export and import policies, and other programs affecting agriculture.

AGRICULTURAL EDUCATION

118. Organizations and Clubs for Farm Boys. II. 2 hr. Problems involved in directing the activities of FFA and similar organizations.

134. Methods of Cooperative Extension. I. 2 hr. Activities of county cooperative extension agents and of the cooperative extension programs in West Virginia.

138. Extension Education Methods. II. 2 hr. Methods used in extension teaching and their underlying principles.

Ed. 160. Materials and Methods of High-School Teaching of Vocational Agriculture. I, II. 3 hr. Organization and preparation for teaching vocational agriculture in the high school.

*180. Assigned Topics. I, II, S. 1-4 hr. PR: Adequate ability and training for the work proposed and permission to register.

Ed. 124. Student Teaching in Vocational Agriculture. I, II. 6 hr.

Ed. 276. Teaching Young and Adult Farmer Classes. I, S. 2 hr. PR: Ed. 100, 105, 106, or consent. Participation in conducting young and adult farmer classes and school-community food preservation centers; organization, course of study, method of teaching and supervision of the classes, young farmers' associations, and adult farmers' organizations.

Ed. 277. Organizing and Directing Supervised Farming, and Supervised Occupational Experience Programs. II, S. 2 hr. PR: Ed. 160 or consent. Planning programs of supervised farming, and supervised occupational experiences, supervising and evaluating such programs for day, young farmer, and adult farmer class members.

AGRICULTURAL ENGINEERING

AGRICULTURAL ENGINEERING

10. Principles of Agricultural Engineering. I. 3 hr. PR: Math. 4. A general course introducing the several fields of agricultural engineering and how they are applied in agriculture and industry. 3 hr. rec.

*180. Assigned Topics. I, II. 1-3 hr.

200. Seminar. I. 1 hr. PR: Senior standing.

201. Agricultural Structures. II. 3 hr. PR: T.A.M. 102. Structural design and functional requirements of agricultural buildings. 2 hr. rec., 3 hr. lab.

210. Application of Electricity to Agriculture. II. 3 hr. PR: E.E. 106. Economic application of electric light, heat, and power. 2 hr. rec., 3 hr. lab.

220. Agricultural Process Engineering. II. 3 hr. PR: C.E. 115, M.E. 121. Application of the fundamentals of engineering to agricultural engineering processes. 2 hr. rec., 1 hr. lab.

*See page 79.

230. Farm Power. I. 4 hr. PR: M.E. 121. Fundamental theories underlying design and operation of internal combusion engines used in agriculture. 3 hr. rec., 3 hr. lab.

240. Hydrology. I. 3 hr. PR: C.E. 115. The study of a hydrologic cycle with emphasis on precipitation and runoff as related to design of hydraulic structures, soil and water conservation, and flood control. 3 hr. rec.

241. Physical Climatology. I. 3 hr. PR: Consent. Physical principles underlying the variations and changes in climate; climatic controls; elements of microclimatology; engineering applications and uses of climatic data. 3 hr. rec.

250. Soil and Water Conservation. I. 3 hr. PR: C.E. 115. Engineering principles and practices in conservation, utilization, and management of soil and water resources. 2 hr. rec., 3 hr. lab.

290. Elements of Machinery Design. II. 3 hr. PR: M.E. 201. Design requirements for construction, principles of operation and adequate adjustment of agricultural machines and principles of testing agricultural equipment. 2 hr. rec., 3 hr. lab.

AGRICULTURAL MECHANICS

152. Farm Shop. I. 3 hr. PR: Math. 3. Construction and repair problems including carpentry, metal working, forging, fitting tools, and filing saws. Primarily for Vocational Agricultural teachers. 1 hr. rec. 6 hr. lab.

*180. Assigned Topics. I, II, S. 1-4 hr.

252. Advanced Farm Shop. II. 3 hr. PR: Agr. Mech. 152. Forging, cold-iron work, tool fitting, woodworking. Offers training for teaching shop work in rural high schools. 1 hr. rec., 6 hr. lab.

253. Advanced Farm Machinery. II. 3 hr. PR: Agr. Eng. 10. Performance of agricultural equipment including calibration, efficiency, adjustments, and maintenance. Theoretical and practical aspects of selection based on economics, compatibility of machines with other equipment and the farming operation, service, and factors of custom operation. 2 hr. rec., 3 hr. lab.

254. Farm Maintenance and Construction Welding. II. 3 hr. PR: Agr. Eng. 10. Characteristics and properties of metals used in farm machinery and equipment. Machinery repair, including oxyacetylene cutting and welding. A.C. and D.C. electric. 1 hr. rec., 6 hr. lab.

259. Farm Structures. II. 3 hr. PR: Agr. Eng. 10. Fundamentals of construction, functional requirements, materials, new equipment, and use of laborsaving ideas and machinery. 2 hr. rec., 3 hr. lab.

270. Electricity in Agriculture. II. 3 hr. PR: Agr. Eng. 10. The fundamentals of electrical energy and its application to lighting, power, heating, and control circuits used in agriculture. 2 hr. rec., 3 hr. lab.

275. Agricultural Engines. I. 3 hr. PR: Agr. Eng. 10. Relation of theory to design and operation of internal combustion engines with emphasis on care, operation, and maintenance. Study covers one, two, three, four, six, and eight cylinder engines, both in two and four stroke cycle designs. 2 hr. rec., 3 hr. lab.

AGRONOMY AND GENETICS

AGRONOMY

2. Principles of Soil Science. II. 4 hr. PR: Chem. 2. An introduction to soil science. 3 lec., 1 lab.

*See page 79.

10. Forest Soils. I. 4 hr. PR: Chem. 1 and 2. Introduction to soil science with particular emphasis on forest soils. 3 lec., 1 lab.

*180. Assigned Topics. I, II. 1-4 hr.

210. Fertilizer and Soil Fertility. I. 3 hr. PR: Agron. 2 or 10. Soil properties in relation to fertility and productivity of soils; evaluation of soil fertility; production of fertilizers and their use in increasing the fertility and productivity of soils. Offered in Fall of even years.

212. Soil Conservation and Management. II. 3 hr. PR: Agron. 210. Principles of soil and water conservation in relation to soil erosion control. Using soil technology to solve soil management problems relating to cropping systems. Offered in Spring of even years.

216. Soil Genesis and Classification. II. 3 hr. PR: Agron. 2 or 10. The classification and mapping of soils. Theory and practice in soil classification, soil mapping, and land judging. Offered in Spring of even years.

230. Soil Physics. I. 3 hr. PR: Agron. 2 or 10. Physical properties of soils, water and air relationships and their influence on soil productivity. Offered in Fall of odd years.

251. Weed Control. I. 3 hr. PR: Agr. 52, Agron. 2, or consent. Fundamental principles of weed control. Recommended control measures for and identification of common weeds. Offered in Fall of odd years.

252. Grain and Special Crops. II. 3 hr. PR: Agr. 52, Agron. 2, or consent. Advanced study of methods in the production of grain and special crops. Varieties, improvement, tillage, harvesting, storage and uses of crops grown for seed or special purposes. Offered in Spring of even years.

254. Pasture and Forage Crops. II. 4 hr. PR: Agr. 52, Agron. 2, or consent. All phases of pasture and forage crop production, including identification, seeding, management, use, seed production, and storage of forage crops. Offered in Spring of even years.

GENETICS

171. Principles of Genetics. II. 3 hr. PR: 8 hr. of biological science. The fundamentals of inheritance. Must be accompanied by Gen. 172.

172. Genetics Laboratory. II. 1 hr. PR: Gen. 221 or registration in Gen. 171.

*180. Assigned Topics. I, II. 2-4 hr. PR: Gen. 171 or 221 and consent.

220. Crop Breeding. II. 3 hr. PR: Gen. 171 or 221. Methods and basic scientific principles involved in the improvement of leading cereal and forage crops through hybridization and selections. Offered in Spring of odd years.

221. Basic Concepts of Modern Genetics. I. 3 hr. PR: 8 hr. of biological science and 1 year of chemistry. Independent inheritance, linkage. Chemical nature of genetic material. Control of phenotype by genetic material. Gene action and coding of genetic material.

224. Human Genetics. II. 3 hr. PR: Gen. 171 or 221 or consent. A study of the genetic system responsible for the development of phenotype in man. Offered in Spring of even years.

ANIMAL INDUSTRY AND VETERINARY SCIENCE

ANIMAL INDUSTRY AND VETERINARY SCIENCE

51. Principles of Animal Science. I. 4 hr. A comparative study of the production of meat, milk, eggs, and wool. Nutrition, physiology, genetics, hygiene,

*See page 79.

physical environment, and economics are discussed as bases for sound managerial decisions.

*180. Assigned Topics. I, II, S. 1-4 hr.

195. Seminar. II. 1 hr. Senior seminar.

ANIMAL BREEDING AND GENETICS

212. Breeding and Incubation: Principles and Practices. I. 3 hr. (1 lab.) PR: 3 hr. in Genetics or consent. Study of methods available for improving and reproducing meat and egg quality. Offered in Fall of even years.

226. Breeding of Farm Animals. I. 3 hr. PR: 3 hr. in Genetics or consent. The application of principles of quantitative population genetics to the improvement of farm animals.

ANIMAL NUTRITION

101. Animal Nutrition. I. 3 hr. Digestion and metabolism of food nutrients, nutrient requirements of farm animals, and nutritive values of feeds and rations.

295. Principles of Nutrition and Metabolism. I. 3 hr. PR: Agr. Biochem. 101, An. Physiol. 100, or equiv. A basic course in animal nutrition.

296. Principles of Nutrition and Metabolism. II. 3 hr. PR: An. Nutr. 295. A continuation of An. Nutr. 295. A basic course in animal nutrition.

297. Nutrition Laboratory Methods. I. 2 hr. PR: An. Nutr. 295 or concurrent registration in Agr. Biochem. 103. Quantitative chemical, physical, and microbiological methods used in animal nutrition research. Offered in Fall of even years.

298. Nutrition Laboratory Methods, Animal Techniques. II. 2 hr. PR: An. Nutr. 297. Laboratory experiments in sampling, digestibility determinations, nutritional balance studies, bioassay, and experimental surgery. Offered in Spring of odd years.

ANIMAL PHYSIOLOGY

100. Introduction to the Physiology of Domestic Animals. I. 3 hr. PR: Zool. 2; Chem. 131 (concurrent), or consent. The function and regulation of the principal system of the animal body.

204. Animal Physiology Laboratory. I. 2 hr. PR: An. Physiol. 100 or concurrent registration.

225. Physiology of Reproduction. II. 3 hr. PR: Zool. 2 or consent. Comparative physiology of reproduction in higher animals, endocrine functions involved in reproduction, genetic and environmental variations in fertility mechanisms.

227. Milk Secretion. II. 3 hr. (1 lab.). PR: Chem. 131; An. Physiol. 225. The evolution, anatomy, and growth of the mammary gland. The chemical, hormonal, physiological and environmental factors affecting lactation. Offered in Spring of odd years.

NOTE: Students are also referred to Psych. 201, Physiological Psychology; Zool. 171, Human Physiology; Zool. 273, 274, Cellular Physiology; and Zool. 276, Comparative Physiology.

ANIMAL PRODUCTION

103. Poultry Feeding and Management. II. 3 hr. Factors in poultry production, feeding, and management as related to scientific investigations. Offered in Spring of even years.

*See page 79.

108, 109, 110. Poultry Plant Experience. I, II, S. 1 hr. (3 hr. lab.). Experience in operating a poultry breeding farm, including trapnesting, incubation, and pedigreeing. A report will be required.

122. Milk Production. II. 3 hr. (1 lab.). Feeding and management of dairy cattle.

*123. Dairy Cattle History and Selection. II. 3 hr. (2 labs.). To familiarize the student with the history, development and programs of the breeds of dairy cattle as well as the modern concepts in phenotypic evaluation.

*138. Grading and Selection of Meat Animals. II. 2 hr. (2 labs.). A study of the art of visual appraisal of live meat animals and the evaluation of scientific techniques used in selecting breeding stock and evaluating carcass merit.

*141. Beef Production. I. 3 hr. (1 lab.). PR: An. Nutr. 101. Physiological and economical bases of beef production.

*142. Pork Production. II. 3 hr. (1 lab.). PR: An. Nutr. 101. Physiological and economical bases of pork production. Offered in Spring of even years.

143. Evaluation and Selection of Meat Animals. I. 2 hr. (2 labs.). PR: An. Prod. 138 and consent. Evaluation of breeding merit and potential carcass characteristics in sheep, swine and beef cattle. Students taking this will be required to participate in tours of representative flocks and herds. Consideration of the Quarter Horse is included.

162. Sheep Production. II. 3 hr. (1 lab.). PR: An. Nutr. 101. Physiological and economical bases of sheep production. Offered in Spring of odd years.

201. Advanced Poultry Production. I. 3 hr. PR: An. Prod. 103 or An. Nutr. 101. Special phases of broiler and egg production, disease control, laborsaving studies, recent designs in building and heating equipment for all types of poultry. Offered in Fall of even years.

223. Advanced Livestock Production. I. 3 hr. (1 lab.). PR: An. Nutr. 101 and consent. Phases of beef production involving problem work in specialized commercial and purebred fields, including processing.

224. Advanced Livestock Production. II. 3 hr. (1 lab.). PR: An. Nutr. 101. Evaluation of current research in animal science and its applications to production and management.

FOOD SCIENCE

12. Dairy Technology. II. 3 hr. (1 lab.). Introductory. Composition and properties of milk and milk products; butterfat testing; manufacture of dairy products. Offered in Spring of odd years.

106. Preparation and Grading of Eggs and Poultry for Market. I. 2 hr. (1 lab.). Latest methods in killing, dressing, and grading poultry. Grading, storing, and processing eggs for market. Offered in Fall of odd years.

107. Milk and Public Health. I. 3 hr. (1 lab.). Food value of milk and its production and processing in relation to public health. Offered in Fall of odd years.

124. Judging Dairy Products. II. 2 hr. (2 labs.). A laboratory course in evaluating and judging dairy products.

130. Market Milk Products and Frozen Desserts. I. 4 hr. (1 lab.). The assembling, processing, packaging, storing and merchandising of dairy products. (Does not carry graduate credit for students majoring in Dairy Foods.)

*Transportation for required trips in connection with these courses will generally be supplied by the College. Students will be responsible for their meals and lodging.

131. Butter, Cheese and Concentrated Milk Products. II. 3 hr. (1 lab.). Manufacture of butter, concentrated milk products, and various types of cheeses. (Does not carry graduate credit for students majoring in Dairy Foods.) Offered in Spring of even years.

166. Meats. II. 2 hr. (1 lab.). Lectures and demonstrations in identification, selection, and nutritive value of meat cuts. Primarily for home economics students. Offered in Spring of even years.

*167. Meats. I. 3 hr. (2 labs.). Processing, curing, and care of meats. Visit to one of the large packing houses of Pittsburgh required.

*169. Meat Judging. I. 2 hr. (2 labs.). Tour of representative packing plants required.

*202. Advanced Meats. II. 3 hr. (2 labs.). PR: Food Sci. 167. Studies covering composition of meat, complete fabrication of meat animal carcasses, factors influencing yield, physiology and chemistry of pertinent phenomena, and merchandising of meat. Offered in Spring of even years.

232. Advanced Dairy Technology. II. 4 hr. (2 labs.). Study of the effect of major milk constituents on properties of dairy products and study of analytical methods used in quality and composition control of dairy products. Offered in Spring of odd years.

VETERINARY SCIENCE

102. Animal Pathology. I. 3 hr. Diseases of domestic animals, with special emphasis on the common diseases.

206. Parasites and Pathology. II. 3 hr. PR: Zool. 2 or equiv. Common parasites of farm animals, their control, and their effect upon the host. Offered in Spring of odd years.

HORTICULTURE

HORTICULTURE

107. General Horticulture. I. 3 hr. PR: Biol. 1, Bot. 1, Agr. 52, or consent. Principles underlying present day horticultural practice with special emphasis on how basic discoveries in plant science have been applied in horticulture.

115. Judging and Identification of Apple Varieties. I. 1 hr. Two laboratory periods first half of semester. Identification and judging of apple varieties.

116. Flower Judging. II. 1 hr. One laboratory period per week. Identification and judging of flowers with emphasis on the aesthetic values which underlie desirability in a variety.

117. Vegetable Identification and Judging. I. 1 hr. Identification and judging the common vegetables and the tests associated with olericulture in West Virginia. Emphasis is placed on the cultural practices associated with top quality vegetables.

141. Greenhouse Management. II. 3 hr. A practical study of greenhouses.

151. Floral Design. I. 3 hr. PR: Hort. 141 or consent. A basic course in flower arrangement to cover all occasions for the home and retail flower shop.

160. Woody Plant Materials. I. 3 hr. PR: Bot. 1. Identification, ecology, and evaluation of trees, shrubs, vines and groundcovers for landscape plantings.

*Transportation for required trips in connection with these courses will generally be supplied by the College. Students will be responsible for their meals and lodging.

161. Woody Plant Materials. II. 3 hr. PR: Hort. 160 or consent. Identification, ecology and evaluation of trees, shrubs, vines and groundcovers for landscape plantings.

162. Plant Materials. I. 3 hr. PR: Hort. 161 or consent. Identification, description, adaptability and evaluation of the principal kinds and varieties of annual and herbaceous perennials with emphasis on their use as design elements.

*180. Assigned Topics. I, II, S. 1-4 hr.

204. Plant Propagation. II. 3 hr. A study of the practices of plant propagation and the factors involved in reproduction in plants.

229. Landscape Design. I. 3 hr. (1 lec., 1 scheduled lab., 1 arranged lab.). A course in ornamental horticulture giving an appreciation of the basic principles of design and information pertaining to the use and care of ornamental plants around the home.

240. Horticulture Theory and Procedure I—Tree-Fruits and Small-Fruits. I. 4 hr. (Two 2-hr. lectures). PR: Agr. 52, Hort. 107, or consent. Principles and operations involved in the production of fruits.

241. Horticulture Theory and Procedure II—Vegetables and Handling and Storage. II. 4 hr. (Two 2-hr. lectures). PR: Agr. 52, Hort. 107, or consent. Principles of vegetable production. Physiology, handling, and storage of perishable horticultural commodities.

LANDSCAPE ARCHITECTURE

10. Architectural Design. I. 4 hr. Introduction to the architectural elements involving the expression of a variety of materials in two- and three-dimensional design.

12. History of Landscape Architecture. II. 3 hr. Landscape design from early times in Asia, Europe, and the American scene.

21. Architectural Design. II. 4 hr. Continuation of L.A. 10 with a study of more complicated problems to further develop analytical and creative ability.

25. Theory of Landscape Architectural Design. I. 3 hr. PR: L.A. 12. Introduction to basic theory and landscape design principles.

26. Landscape Architectural Design. II. 3 hr. PR: L.A. 21. Problems in basic landscape design to acquaint the student with the various materials and to develop his capacity to design in the outdoor space.

62. Professional Experience. S. No credit. Experience in a landscape architectural position with a private or public organization is invaluable to the training of a student. Completion of a minimum of three months' experience is required prior to graduation. Evidence of work completed will be handled at the discretion of the Department of Horticulture.

131. Landscape Architectural Construction. I. 3 hr. PR: L.A. 26. Landscape structures, their use in design including selection and use of materials.

132. Landscape Construction. II. 3 hr. PR: L.A. 131. Preparation of grading and drainage plans including specifications and cost estimates.

142. Landscape Architectural Design. I. 4 hr. PR: L.A. 26. Design problems involving private, public, and semi-public areas with emphasis on plan analysis, detail, and presentation. Problems are integrated with construction and plant materials.

145. Landscape Architectural Design. II. 4 hr. PR: L.A. 26, 131, and 132. Continuation of L.A. 142.

*See page 79.

146. Planting Design. I. 2 hr. PR: Hort. 160, Hort. 162, and L.A. 145. Laboratory design problems in the use of plant materials with emphasis on plants as objects of the design and their association and arrangement for landscape effect.

147. Planting Design. II. 2 hr. Continuation of L.A. 146.

148. Design Analysis. II. 3 hr. PR: L.A. 145, 146, 147. Analysis of executed problems through discussions involving basic theory, readings, and reports.

265. City Planning. I. 3 hr. PR: Consent of Department Chairman. Background history of city planning and survey data necessary for preparation of master plan.

270. Landscape Architectural Design. I. 5 hr. PR: L.A. 145. Advanced design problems; a continuation of L.A. 142 and 145 with emphasis on site function and detail.

272. Landscape Architectural Design. II. 5 hr. Continuation of L.A. 270.

276. Recreation Planning. I. 3 hr. PR: L.A. 145. Design of park and recreation areas involving park history, classification theory, and administration.

278. Site Planning Projects. I. 4 hr. PR: L.A. 270. Preparation of site plans and master programs, housing subdivisions, and institutional areas. Professional practice and ethics are integrated with the master program.

282. Planting Design. I. 2 hr. Continuation of L.A. 147 involving specifications and cost estimates.

284. Professional Practice. II. 2 hr. The profession of landscape architecture involving the procedures in the preparation of contract documents, fees, estimates, operation of an office, and the relationship to clients and contractors.

PLANT PATHOLOGY, BACTERIOLOGY, AND ENTOMOLOGY

BACTERIOLOGY

141. General Bacteriology. I, II. 4 hr. PR: Chem. 1, 2. Introductory, morphological, cultural, and physiological characteristics of bacteria; application of bacteriology to agriculture, home economics, sanitation, and health.

*180. Assigned Topics. I, II, S. 1-4 hr. per sem.

247. Food Microbiology. I. 4 hr. PR: Bact. 141, Organic Chemistry or consent. The ecology and physiology of microorganisms important in the manufacture and deterioration of foods, and the techniques for the microbiological examination of foods. Offered in Fall of even years.

248. Sanitary Bacteriology. I. 3 hr. PR: Bact. 141. Standard bacteriological methods used in routine examination of water and sewage. Offered in Fall of odd years.

ENTOMOLOGY

152. Forest Entomology. II. 3 hr. PR: Forestry 112. Relationships between insects and the forest; recognition and control of important species. This course is primarily designed for forestry students.

*180. Assigned Topics. I, II, S. 1-4 hr. PR: Entom. 202 or equiv. Special studies in insect ecology, life-histories, macro- and micro-anatomy, taxonomy, physiology, and control methods.

202. Agricultural Entomology. II. 4 hr. PR: Zool. 1, 2. The basic aspects of insect life, emphasizing the study of economically important insects and their

*See page 79.

control. Designed to meet the needs of students in agriculture. Does not carry graduate credit for majors in Entomology.

203. Economic Entomology. II. 3 hr. PR: Entom. 202. Evaluation of insect control problems; study of surveys and control methods; equipment; insecticides. Offered in Spring of odd years.

PLANT PATHOLOGY

153. Forest Pathology. I. 4 hr. PR: Biol. 2, For. 112. Important diseases of forest and shade trees. Causes and methods of control.

*180. Assigned Topics. I, II, S. 1-4 hr.

201. General Plant Pathology. I. 4 hr. PR: Bact. 141. Nature and causes of plant diseases; methods of control.

202. Principles of Plant Pathology. II. 4 hr. PR: Bact. 141 and either Plant Path. 153, 201, or 203, or consent. Primarily for graduate students and seniors majoring in botany, biology, or agricultural science. Nature of diseases in plants with practice in laboratory methods. Offered in Spring of even years.

203. Mycology. I. 4 hr. Lectures, field and laboratory studies of parasitic and saprophytic fungi.

209. Nematology. I. 3 hr. PR: Pl. Path. 201 or consent. Primarily for graduate students majoring in the agricultural sciences, zoology or botany. Nematode taxonomy, bionomics, and control, with particular emphasis on plant parasitic forms. Offered in Fall of even years.

*See page 79.

The Division of Forestry

FACULTY

W. Clement Percival, B.S., M.S., Ph.D., *Assistant Dean, College of Agriculture, Forestry, and Home Economics; Director, Division of Forestry; Professor of Forestry; Forester, Agricultural Experiment Station* (1959), 1934.

John F. L. Bell, B.S.F., *Associate Forester, Agricultural Experiment Station* (1960), 1953.

H. Phillip Berthy, B.S.F., M.S., *State Extension Specialist, Wood Utilization* (1963), 1950.

Arthur B. Brawner, B.S., M.W.T., *Instructor and Research Assistant in Wood Science* (1963).

Maurice G. Brooks, A.B., M.S., *Professor of Wildlife Management* (1947), 1923.

James H. Brown, B.S.F., M.F., *Assistant Professor of Silviculture; Assistant Silviculturist, Agricultural Experiment Station* (1957). (On leave).

Kenneth L. Carvell, B.A., M.F., D.For., *Professor of Silviculture; Silviculturist, Agricultural Experiment Station* (1964), 1953.

Franklin C. Cech, A.B., B.S.F., M.F., Ph.D., *Associate Professor of Forest Genetics; Associate Forest Geneticist, Agricultural Experiment Station* (1964).

William L. Cones, B.S.F., M.F., *Lecturer in Forestry* (Assigned to Egerton College, Kenya) (1963), 1962.

Allen W. Goodspeed, B.S., M.F., *Professor of Forest Management; Forester, Agricultural Experiment Station; Director of University Forests* (1949).

Albert E. Grafton, B.S.F., M.S., *Instructor in Forest Economics* (1963).

David A. Groom, B.S., *Research Assistant in Wood Science* (1964).

John R. Hamilton, B.S.F., M.S.F., Ph.D., *Professor of Wood Science; Wood Scientist, Agricultural Experiment Station* (1964).

Norman D. Jackson, B.S.F., M.W.T., *Assistant Professor of Wood Science; Assistant Wood Scientist, Agricultural Experiment Station* (1961), 1953.

William E. Kidd, Jr., B.S., *State Extension Specialist, Forest Management* (1965).

Christian B. Koch, B.S.F., M.S., Ph.D., *Associate Professor of Wood Science; Associate Wood Scientist, Agricultural Experiment Station* (1964), 1951.

Don L. Kulow, B.S., M.F., Ph.D., *Assistant Professor of Forest Mensuration; Assistant Forest Mensurationist, Agricultural Experiment Station* (1963).

Robert L. Smith, B.S., M.S., Ph.D., *Assistant Professor of Wildlife Management; Assistant Wildlife Biologist, Agricultural Experiment Station* (1958).

Ronald B. Stemple, B.S.F., *Instructor and Research Assistant in Forestry* (1964).

Earl H. Tryon, B.S., M.S., Ph.D., *Professor of Silviculture; Silviculturist; Agricultural Experiment Station* (1952), 1945.

Johnny Walker, B.S.F., *Research Assistant in Forestry* (1964).

David E. White, B.S., M.S., Ph.D., *Assistant Professor of Forest Economics; Assistant Forest Economist, Agricultural Experiment Station* (1964).

General Information

ORGANIZATION AND PURPOSE

In its Division of Forestry, West Virginia University offers five curriculum options of four years each, three leading to the professional degree of Bachelor of Science in Forestry, one leading to the degree of Bachelor of Science in Wood Science, and one leading to the Bachelor of Science degree. A student may major in forest management, wildlife management, wood industry, wood science, or forest science.

The field of forestry is a broad one. Those who enter it must receive an education of a breadth equal to that of the profession which they expect to make their life work. The professional forester's work includes such diversified activities as timber production, logging, surveying, timber estimating, park management, forest protection, forest-stand improvement, flood control, watershed protection, soil erosion

control, submarginal land development, restoration of game, forest-range management, stream development, lumber dry-kiln operation, plywood and furniture manufacture, timber preservation, and construction of public camps and summer homesites.

The wide scope of the modern field of forestry demands a thorough basic training for the professional forester. This accounts for the large number of required courses in the professional forestry curricula. If a forester wishes to specialize in any one branch of the field, graduate work is needed.

The curriculum options in forest management, wildlife and fish management, and wood industries include a two-years' broad foundational study of the natural and social sciences basic to the field of forestry. This is followed in the junior and senior years by a more detailed study of the principles and techniques. Many of the courses provide field laboratories, enabling the student to see first-hand application of the principles presented in the classroom and to experiment with the various techniques he is learning.

The curriculum options in wood science and in forest science are specifically intended to prepare students for graduate work in the technical phases of wood use or forest production. These are offered primarily for students who anticipate careers in research or teaching.

Recreation on forest lands has become an activity and a use of major importance. To meet the need for foresters trained to organize and supervise recreation activities, students who are candidates for the Bachelor of Science in Forestry degree may elect a program of studies directed especially toward forest recreation activities. The Division of Forestry, with the cooperation of such other University departments as recreation, horticulture, psychology, and sociology, offer the courses which have been considered basic to recreation training.

In addition to the forest work which forms a part of the regular courses at the University and the summer Forestry Camp, students in the forest management, wildlife and fish management, and wood industries options are expected to devote the summer after their junior year to employment with a forestry unit or wood-using industry; wood science students are expected to find employment with a forest products laboratory, wood-using industry, or related facility; and forest science majors may work for a forest research center. This gives further experience which is valuable in connection with their fourth-year studies as well as in obtaining permanent employment after graduation.

Many opportunities for summer employment are arranged through the Division of Forestry with the United States Forest Service and with private forest industries which are members of the National Lumber Manufacturers Association. The remunerations for such temporary undergraduate employment varies from about $250 to $325 per month.

FACILITIES FOR INSTRUCTION

The Division of Forestry is one of twenty-eight forestry schools in the country fully accredited by the Society of American Foresters. Situated in Morgantown, it is favorably located in relation to forests available for educational and research use.

The new forestry center, located on the Evansdale campus, provides the most modern facilities for forestry instruction and research. This structure, completed in 1965 at a cost of $2.5 million, contains specialized laboratories for all phases of forestry activities, classrooms, faculty offices, graduate offices and labs, a forestry reading room, student lounge, and locker facilities.

The wood science area includes wood seasoning and preservation labs with dry kilns, treating vats, and pressure units designed to duplicate all methods of drying and preserving wood. In the wood processing area, woodworking equipment is available for preparing wood specimens for study and research work.

The wood identification and chemistry laboratories provide facilities for the detailed study of wood structures and wood chemistry. A wood finishing area houses modern spray booths for instruction and research in the various techniques of wood finishing. Other wood science facilities include space for assembling, bonding and testing laminated beams, and a nuclear reactor.

The forest management area contains special laboratories for the study of silvics, silviculture, management, valuation, economics, and photogrammetry, as well as a statistical lab, weighing room, and radioactive counter room.

In the forest recreation area undergraduate, graduate, and faculty labs are provided for wildlife, fisheries, and recreation studies.

The forestry reading room has been developed primarily for student use. It contains more than 20,000 catalogued books and bulletins covering the field of forestry. Periodicals of interest to the forester may be readily found. The student forestry organizations have decorated the reading room with pictures and trophies, creating interesting and pleasant surroundings for study.

Coopers Rock State Forest, an area of 13,000 acres fronting on Cheat Lake, is less than 10 miles from the University. The Division of Forestry has a 99-year lease on 7,500 acres of this Forest. The tract, now known as the West Virginia University Forest, is managed by the Division and is used for teaching, research and demonstration purposes. The Monongahela National Forest lies within 45 miles of Morgantown. The University Farm Woods, 100 acres bearing mature timber, is within two miles. Acquisition of the 500-acre Tygart Valley Forest at Dailey has increased the educational and research facilities of the Division. These forests are utilized by forestry students for study during their four years of training.

During 1951, an agreement was completed between West Virginia University and the Island Creek Coal Company. This agreement made the 3,000-acre Island Creek Experimental Forest available for research in applied forestry. The Division of Forestry maintains a resident forester at Holden who is in charge of the research forest in nearby Mingo County. Methods of forest production on a commercial basis, suited to the forest types and topography of southern West Virginia, are being studied. The experimental work is open to inspection by forestry students.

Coopers Rock Recreation Area, including the tent camping and picnic facilities, the Chestnut Ridge group camp and ski area, Mont Chateau State Park, and Cheat Lake, are available forest recreation areas for laboratory use.

Camp Wood

The Forestry Camp is held each summer for students who have completed their sophomore year of the forest management, wildlife and fish management, or wood industries option. Camp Wood is situated near Alvon, about 12 miles north of White Sulphur Springs, on the southern end of the Monongahela National Forest in Greenbrier County. This location offers a great variety of forest types, conditions, activities, and industries.

The program of instruction provides training and practical experience in land surveying, timber estimating, forest management, wildlife management, and wood utilization. A logging operation is carried out by the students on the Meadow Creek Management Area. This is a tract of mature oak and pine timber which has been reserved by the United States Forest Service for this purpose. A considerable area of timber near the camp has been reserved by private owners for mensuration studies. The camp program culminates in a one-week trip into the southern pine region, where silvicultural operations and wood-using industries are studied.

For resident students the cost is $8.00 per credit hour; for nonresidents, tuition is $28.00 per credit hour. Food and lodging at camp costs $144 plus tax. The Student Union Building Fee is $2.00. These must be paid to the University Comptroller at the time of registration. Other fees include insurance, approximately $3.15 for 10 weeks (required only if the student has no University insurance), and $10.00 for lodging on the southern trip. Other expenses for scheduled trips from camp usually total about $25.00. All University fees are subject to change without notice.

Requirements for the Degrees

The Division of Forestry offers three curriculum options leading to the degree of Bachelor of Science in Forestry (B.S.F.). These include the forest management, wildlife and fish management, and wood industry options. The curriculum in wood science leads to the degree of Bachelor of Science in Wood Science (B.S.W.S.). Students completing the requirements of the forest science curriculum receive a Bachelor of Science degree.

FOREST MANAGEMENT

The forest management option offers a strong basic course in Forestry leading particularly to employment in the management of forest land. It is designed to train the student for a professional forestry career in either public or private forestry.

Graduates are prepared to hold positions with the various state forestry and conservation departments, the U.S. Forest Service, the Forestry Division of the U.S. Indian Service, the Soil Conservation Service, and the other federal and state agencies employing professional foresters. They may also be employed by private forest land owners—both corporate and individual—or may enter business as consulting foresters. This option provides a good background for graduate work in all phases of forest production management.

FIRST YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Bot. 1—General	4	Zool. 2—General	4
Chem. 1—General	4	Chem. 2—General	4
English 1—Composition	3	English 2—Composition	3
For. 1—Profession	1	For. 2—Profession	1
For. 3—Convocation	0	For. 4—Convocation	0
Math. 2—Algebra	3	Math. 4—Plane Trigonometry	3
Mil. Sci. or Air Sci. 1	2	Mil. Sci. or Air Sci. 2	2
Phys. Ed. 1—General Program	1	Phys. Ed. 2—General Program	1
	18		18

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Agron. 10—Forest Soils	3	Bot. 171—Plant Physiology	3
Bot. 61—Systematic	2	C.E. 6—Topographic Mapping	2
Bot. 67—Dendrology	4	Econ. 52—Principles	3
C.E. 5—Land Surveying	4	For. 6—Convocation	0
Econ. 51—Principles	3	For. 11—Silvics	3
For. 5—Convocation	0	For. 21—Mensuration	4
Mil. Sci. or Air Sci. 3	2	Mil. Sci. or Air Sci. 4	2
	18		17

SUMMER PRECEDING THIRD YEAR

10 Weeks, 10 Credit Hours

For. 106—Forest Surveying and Mensuration Field Practice	5
For. 107—Forest Management, Utilization, and Wildlife Practices	5
	10

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
For. 112—Silvicultural Systems	3	For. 113—Seeding and Planting	3
For. 130—Wood Technology	3	For. 114—Forest Economics	3
For. 151—Protection	2	For. 125—Policy and Administration	3
Physics 1—Introductory	4	For. 136—Wood Processes and Products	3
Electives	5	Electives	5
	17		17

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
For. 116—Regional Silviculture	2	For. 126—Forest Measurement by Aerial Photographs	2
For. 123—Management	4	For. 141—Wildlife Management	3
For. 124—Forest Finance	3	Entomol. 152—Forest Entomology	3
Pl. Path. 153—Forest Pathology	3	Electives	9
Electives	6		
	18		17

WILDLIFE AND FISH MANAGEMENT

The wildlife and fish management option is designed to give basic undergraduate training in wildlife and fisheries biology. Students who elect this option will satisfy the requirement for graduation by completing successfully 150 credit hours, including all the required courses listed below, and elective courses in botany, zoology, bacteriology, and other related fields. Those completing the curriculum are granted the degree of Bachelor of Science in Forestry.

Many wildlife and fisheries biology positions require the Master's Degree, and majors in this curriculum are encouraged to enroll for graduate work in other institutions. Graduates in wildlife management will, however, meet all requirements for taking the U. S. Civil Service examination for biologist, and will ordinarily meet all requirements for the entering examination in general forestry.

Students in wildlife management will be advised to include among their electives, Zool. 224, Limnology; Zool. 263, Ichthyology; Zool. 264, Fishery Biology; Zool. 265, Ornithology; Bot. 221, Plant Ecology; Zool. 251, Invertebrate Zoology; Zool. 205, Principles of Evolution; Agr. 254, Pasture and Forage Crop; Genetics 171-172; and Statistics 101 and 211.

Students wishing to be qualified as fishery biologists may substitute Zool. 251, 224, 263, and 264 for the Zoology courses.

FIRST YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Bot. 1—General	4	Zool. 2—General	4
Chem. 1—General	4	Chem. 2—General	4
English 1—Composition	3	English 2—Composition	3
For. 1—Profession	1	For. 2—Profession	1
For. 3—Convocation	0	For. 4—Convocation	0
Math. 2—Algebra	3	Math. 4—Plane Trigonometry	3
Mil. Sci. or Air Sci. 1	2	Mil. Sci. or Air Sci. 2	2
Phys. Ed. 1—General Program	1	Phys. Ed. 2—General Program	1
	18		18

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Agron. 10—Forest Soils	3	Bot. 171—Plant Physiology	3
Bot. 67—Dendrology	4	C.E. 6—Topographic Mapping	2
C.E. 1—Surveying	2	For. 6—Convocation	0
Econ. 51—Principles	3	For. 11—Silvics	3
For. 5—Convocation	0	For. 21—Mensuration	4
Mil. Sci. or Air Sci. 3	2	Mil. Sci. or Air Sci. 4	2
Electives	4	Electives	4
	18		18

SUMMER PRECEDING THIRD YEAR

10 Weeks, 10 Credit Hours

For. 106—Forest Surveying and Mensuration Field Practice	5
For. 107—Forest Management, Utilization, and Wildlife Practices	5
	10

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
For. 112—Silvicultural Systems	3	For. 113—Seeding and Planting	3
For. 130—Wood Technology	3	For. 114—Forest Economics	3
For. 151—Protection	2	For. 125—Policy and Administration	3
Zool. 250—Animal Systematics	2	For. 136—Wood Processes and Products	3
Physics 1—Introductory	4	Electives	6
Electives	3-4		
	17-18		18

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
For. 123—Management	4	For. 144—Forest Zoology	3
Bot. 161—Systematics	4	For. 145—Life Histories of Game Animals	3
Zool. 231—Comparative Anatomy *or*	5	For. 126—Forest Measurement by Aerial Photographs	2
Zool. 271—Vertebrate Physiology	4	Entomol. 152—Forest Entomology	3
Electives	3	For. 141—Wildlife Management	3
		Electives	3
	15-16		17

WOOD INDUSTRY

The four-year wood industry option leads to the degree of Bachelor of Science in Forestry and is designed to develop foresters for work with wood-using industries. The wood-using industry includes basic lumber, veneer, paper, and allied products, and ranks fourth in the nation in the number of wage earners employed.

This option also requires sufficient undergraduate courses in the College of Commerce to enable qualified students to earn an M.S. or M.B.A. degree in that college after an additional year of study at the graduate level. A student with undergraduate training in wood industry, followed by graduate training in business administration or economics, will be in demand for managerial positions in the wood-using industries.

Students in the wood industry option who do not qualify for graduate work may earn a second undergraduate degree in the College of Commerce in one year by completing a minimum of 30 semester hours which include the basic commerce courses.

FIRST YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Bot. 1—General	4	Chem. 2—General	4
Chem. 1—General	4	English 2—Composition	3
English 1—Composition	3	For. 2—Profession	1
For. 1—Profession	1	For. 4—Convocation	0
For. 3—Convocation	0	Math. 4—Plane Trigonometry	3
Math. 2—Algebra	3	Mil. Sci. or Air Sci. 2	2
Mil. Sci. or Air Sci. 1	2	Phys. Ed. 2—General Program	1
Phys. Ed. 1—General Program	1	Electives	4
	18		18

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Bot. 67—Dendrology	4	Econ. 52—Principles	3
C.E. 1—Surveying	2	For. 6—Convocation	0
Econ. 51—Principles	3	For. 11—Silvics	3
For. 5—Convocation	0	For. 21—Mensuration	4
For. 131—Wood Identification	3	Mil. Sci. or Air Sci. 4	2
Mil. Sci. or Air Sci. 3	2	Electives	6
Electives	4		
	18		18

SUMMER PRECEDING THIRD YEAR

10 Weeks, 10 Credit Hours

For. 106—Forest Surveying and Mensuration Field Practice	5
For. 107—Forest Management, Utilization, and Wildlife Practices	5
	10

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Acctg. 1—Principles of Accounting	3	Acctg. 2—Principles of Accounting	3
For. 112—Silvicultural Systems	3	For. 114—Forest Economics	3
For. 132—Properties of Wood	3	For. 136—Wood Processes and Products	3
For. 151—Protection	2	Entomol. 152—Forest Entomology	3
Physics 1—Introductory	4	Management 111—Industrial Mgmt.	3
Electives*	3	Electives	3
	18		18

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Bus. Adm. 111—Business Law**	3	Econ. 125—Statistics**	3
For. 123—Management	4	For. 135—Seasoning and Preservation	4
For. 124—Finance *or* Fin. 111—Business Finance	3	For. 137—Grading Wood Products	3
Pl. Path. 153—Forest Pathology	4	Markt. 111—Principles of Marketing	3
Electives	3	Statistics 238—Statistical Quality Control	3
	17		16

*Econ. 111 should be elected by students planning graduate work in economics.

**Students who are particularly interested in wood processes and properties may substitute For. 231 and For. 236 for Bus. Adm. 111 and Econ. 125.

WOOD SCIENCE

The option in wood science is intended to prepare students to pursue graduate work in the technical phases of wood use or to enter directly into positions dealing with the conversions of forest crops into useful products. Such positions may be either governmental or industrial, with both groups further divided into various degrees of administrative, research, or developmental effort.

Students electing to enter the field of wood science should demonstrate a marked facility in mathematics, physics, and chemistry, since these basic sciences form the foundation for a large part of the knowledge involved in the properties and processing of wood.

FIRST YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Bot. 1—General	4	Bot. 171—Plant Physiology	3
English 1—Composition	3	C.E. 1—Surveying	2
For. 1—Profession	1	English 2—Composition	3
For. 3—Convocation	0	For. 2—Profession	1
Math. 15—Anal. Geom. and Calculus	4	For. 4—Convocation	0
(Math. 14—Supplement to Math. 15, if needed)	(2)	Math. 116—Anal. Geom. and Calculus	4
Mil. Sci. or Air Sci. 1	2	Mil. Sci. or Air Sci. 2	2
Phys. Ed. 1—General Program	1	Phys. Ed. 2—General Program	1
	15 (17)		16

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Chem. 1—General	4	Chem. 2—General	4
For. 5—Convocation	0	For. 6—Convocation	0
For. 131—Wood Identification	3	For. 21—Mensuration	4
Math. 117—Calculus	4	Physics 112—General	5
Physics 111—General	5	T.A.M. 101—Statics	3
Mil. Sci. or Air Sci. 3	2	Mil. Sci. or Air Sci. 4	2
	18		18

SUMMER PRECEDING THIRD YEAR

A minimum of 10 weeks of summer employment with a forest products laboratory, wood-using industry, or related facility, will be required.

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Chem. 233—Organic	4	Chem. 260—Physical	3
Econ. 51—Principles	3	For. 11—Silvics	3
Bot. 67—Dendrology	4	For. 114—Forest Economics	3
For. 132—Properties of Wood	3	For. 136—Wood Processes and Products	3
T.A.M. 102—Mechanics of Materials	3	Electives	6
Electives	2		
	19		18

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Speech 11—Principles	3	For. 135—Seasoning and Preservation	4
Restricted Electives*	11	Restricted Electives*	7
Core or General Electives	4	Core or General Electives	7
	18		18

*Restricted Electives: Eighteen credit hours must be taken from among the following list of courses in: agriculture, biology, botany, chemistry, engineering, forestry, languages, mathematics, and physics.

List of Approved Restricted Electives for Wood Science Curriculum

AGRICULTURE: Statistics 211, 212, and 238, 3 hr.; Genet. 221, 3 hr.; Plant Path. 153, 4 hr.

BOTANY AND BIOLOGY: Bot. 221, 4 hr.; Biol. 211, 3 hr.

CHEMISTRY: Chem. 5 or 105, 4 hr.; Chem. 6 or 106, 4-5 hr.; Chem. 15 or 115, 3 hr.; Chem. 201, 3 hr.; Chem. 262, 2 hr.

ENGINEERING: Mat.Sci.E. 255, 3 hr.; C.E. 160, 4 hr.; C.E. 170, 3 hr.; C.E. 260, 3 hr.; C.E. 270, 3 hr.; C.E. 271, 3 hr.; E.E. 105, 4 hr.; E.E. 120, 3 hr.; E.E. 121, 2 hr.; I.E. 140, 3 hr.; I.E. 250, 3 hr.; I.E. 288, 2 hr.; T.A.M. 103, 3 hr.; T.A.M. 104, 3 hr.; T.A.M. 200, 3 hr.; T.A.M. 203, 3 hr.; M.E. 20, 3 hr.

FORESTRY: For. 112, 3 hr.; For. 123, 4 hr.; For. 124, 3 hr.; For. 137, 3 hr.; For. 138, 3 hr.; For. 139, 3 hr.; For. 151, 2 hr.; For. 170, 171, 172, 173, Forestry Problems, 1 hr. each; For. 222, 3 hr.; For. 231, 3 hr.

LANGUAGES: German 121 and 122, 6 hr.; Russian 1 and 2, 6 hr.; French 1 and 2, 6 hr.

MATHEMATICS: Math. 240 or 253, 3 hr.; Math. 242, 3 hr.; Math. 256, 3 hr.

PHYSICS: Physics 113, 114, 3 hr. per sem.; Physics 117, 3 hr.; Physics 221, 3 hr.; Physics 284, 3 hr.

OPTION LEADING TO GRADUATE STUDY IN ENGINEERING

There is a need for wood engineers to carry on research and developmental work for industrial and governmental organizations. The wood science option offers an opportunity to enter this important and rewarding field of work. Qualified students first complete four years of undergraduate study for the degree of Bachelor of Science in Wood Science (B.S.W.S.) and then study an additional year at the graduate level in the College of Engineering for the degree of Master of Science in Enginering (M.S.E.).

Those students who are interested in this program should take the following courses as restricted electives in their undergraduate program:

ENGINEERING: C.E. 160, C.E. 260, C.E. 270, C.E. 271, T.A.M. 104.

MATHEMATICS: Math. 240 or 253.

FOREST SCIENCE

The forest science option is intended specifically to prepare students for graduate work in one of the forest sciences. This curriculum is strong in the basic sciences, has enough elective hours to accommodate the students' special needs, as well as provide for the Core Curriculum requirements. Students completing the requirements of this curriculum option receive a Bachelor of Science (B.S.) degree.

Students electing the forest science option will be assigned an appropriate adviser in the area in which they plan to specialize. The student will officially enter this curriculum at the end of the sophomore year. At that time he must have completed all freshman and sophomore requirements, or their equivalent, and present a 2.5 overall average. Students who do not qualify to enter this curriculum at the end of their sophomore year can transfer to the forest management, wildlife management, or wood industries curriculum without loss of time or credits, and should be able to obtain a B.S.F. in the normal four-year period.

FIRST YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Bot. 1—General	4	Chem. 1—General	4
English 1—Composition	3	English 2—Composition	3
For. 1—Profession	1	For. 2—Profession	1
For. 3—Convocation	0	For. 4—Convocation	0
Math. 15—Anal. Geom. & Calculus*	4	Math. 116—Anal. Geom. & Calculus	4
(Math. 14—Supplement to Math. 15, if needed)	(2)	Zool. 2—Vertebrate	4
Mil. Sci. or Air Sci. 1	2	Mil. Sci. or Air Sci. 2	2
Phys. Ed. 1—General Program	1	Phys. Ed. 2—General Program	1
	15 (17)		19

*Students not prepared to take Math. 15 must take Math. 3 and Math. 4 before enrolling in Math. 15.

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Agron. 10—Forest Soils	3	Bot. 171—Plant Physiology	3
Bot. 67—Dendrology	4	For. 6—Convocation	0
C.E. 1—Surveying	2	For. 11—Silvics	3
Chem. 2—General	4	For. 21—Mensuration	4
For. 5—Convocation	0	Mil. Sci. or Air Sci. 4	2
Mil. Sci. or Air Sci. 3	2	Electives	6
Electives	3		
	18		18

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Chem. 233—Organic	4	For. 114—Forest Economics	3
Econ. 51—Principles	3	For. 136—Wood Processes and Products	3
For. 112—Silvicultural Systems	3	Physics 112—General	5
Physics 111—General	5	Electives	7
Electives	3		
	18		18

The summer between the junior and senior year must be spent working for a research center, or in taking 10 additional hours of classwork, or in Summer Camp.

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Statistics 211	3	Statistics 212	3
Electives	15	For. 141—Wildlife Management	3
		Electives	12
	18		18

Courses of Instruction

1, 2. The Profession of Forestry. I and II. 1 hr. per sem. (Required only for students who rank as freshmen in the Division of Forestry.) Survey of the profession of forestry and the opportunities available to foresters.

3, 4, 5, 6. Forestry Convocation. I and II. No credit. All students are expected to attend the weekly convocation. Attendance is required of students during their first four semesters in the Division of Forestry. Speakers and timely topics in forestry and allied fields are presented.

11. Silvics. II. 3 hr. PR or conc: Bot. 67. Forest and environment factors; site and type characteristics.

21. Forest Mensuration. II. 4 hr. PR: Math. 2, 4. Measurements of forest products, trees, and stands; timber estimating; introduction to growth and yield.

106. Forest Surveying and Mensuration Field Practices. S. 5 hr. PR: Bot. 67, C.E. 5, For. 21. The application of surveying and mensurational practice with emphasis on field problems.

107. Forest Management, Utilization, and Wildlife Practices. S. 5 hr. PR: For. 106. Study of forest management, utilization, and wildlife problems. Trip to observe forest management and utilization in the Southern Pine Region.

112. Silvicultural Systems. I. 3 hr. PR: For. 11. Principles of regeneration cuttings, intermediate cuttings, and cultural operations, with their application to forest stands.

113. Seeding and Planting. II. 3 hr. PR: For. 11. Seeding and planting nursery practice; phases of artificial regeneration.

114. Principles of Forest Economics. II. 3 hr. PR: Econ. 51 or Agr. Econ. 102. The economics of production, distribution, and use for forest goods and services. Emphasis is on analytical methods and techniques in dealing with forest economic problems.

116. Regional Silviculture. I. 2 hr. PR: For. 11, PR or conc: For. 112. Major forest types of the United States; their composition, management, problems, and silvicultural treatment.

123. Forest Management. I. 4 hr. PR: Summer Camp, PR or conc: For. 112. The principles of sustained yield forest management. Organization of the forest area, selection of management objectives, application of silvicultural systems, and regulation of the cut. The forest management plan.

124. Forest Finance. I. 3 hr. PR: For. 114. Cost and income items in producing and exploiting forest crops; appraisal of stumpage and damages.

125. Forest Policy and Administration. II. 3 hr. (Upperclassmen only). Forest policy in the United States; important federal and state laws; administration of public and private forests.

126. Forest Measurement by Aerial Photographs. II. 2 hr. PR: For. 21. Elements of photogrammetry; preparation of maps; interpretation of forest types and timber volumes from aerial photographs.

130. Wood Technology. I. 3 hr. PR: Bot. 67. For students other than those taking the Wood Industry or Wood Science option, designed to provide familiarity with the technical aspects of wood utilization.

131. Wood Identification. I. 3 hr. PR: Bot. 67. Identification of commercial timbers of U.S.; basic properties and uses of different woods.

132. Properties of Wood. I. 3 hr. PR: For. 131. Physical and mechanical properties of wood; testing, machining, gluing, finishing, and special processing of wood.

135. Seasoning and Preservation. II. 4 hr. PR: For. 131. Purposes, effects, and methods of seasoning and preserving wood.

136. Wood Processes and Products. II. 3 hr. PR: For. 21. The conversion of standing timber into primary and secondary products.

137. Grading Wood Products. II. 3 hr. PR: For. 21, 131. Inspection methods and application of standard grading rules to forest products, with emphasis on the inspection of hardwood and southern pine lumber.

138. Advanced Lumbering. II. 3 hr. PR: For. 136. Organization of the business operation of logging equipment, records, and cost control.

139. Marketing Forest Products. II. 3 hr. PR: For. 136. Methods of marketing lumber and other forest products in domestic and foreign trade.

140. West Virginia's Natural Resources. I, II. 3 hr. (Primarily for students enrolled in the College of Education, but open to other upper-division students. Professional forestry students may not take this course for credit.) Survey of policies and practices in development and use of soil, water, forest, wildlife, mineral, and human resources in West Virginia.

141. Wildlife Management. II. 3 hr. PR: Bot. 61 and Biol 2. Basic principles of handling wildlife as a forest crop, including population dynamics, ecological relationships, social behavior, habitat manipulation, and game administration.

142. Recreational Developments. II. 2 hr. PR: C.E. 6, Summer Camp. Needs of the active and passive recreationist and means of supplying facilities for meeting these needs in public forests.

143. The Forest Range. II. 2 hr. PR: C.E. 5. Survey of basic range management techniques and practices on forest lands, with consideration of range mapping and important forage plants.

144. Forest Zoology. II. 3 hr. PR: Biol. 2 or Zool. 2. The relationship of mammals, reptiles, amphibians, and fish to the forest, with emphasis on the ecology and taxonomy of these groups.

145. Life Histories of Game Animals. II. 3 hr. PR: Biol. 2 or Zool. 2. Field and laboratory studies of game-bird and game-mammal life histories, with special reference to management of population of these species.

146. Ornithology. II. 2 hr. PR: Biol. 1, 2, or consent. Identification, distribution, and ecology of birds (particularly of forest lands).

151. Forest Protection. I. 2 hr. (Upperclassmen only). Preventative action, preparation activities, and control of forest fires.

170, 171, 172, 173. Forestry Problems. I, II. 1 hr. ea. For seniors only. (4 hr. max.).

183. Farm Woods Management. II. 3 hr. (Professional forestry students may not take this course for credit.) Characteristics of forest trees; management of farm woods for timber, wildlife, watershed protection, and recreation; measuring and marketing farm timber; plantation establishment.

213. Forest Genetics and Tree Improvement. I. 3 hr. PR: Genet. 171 or equiv., or consent. A study of forest genetic principles and their application to forest tree improvement including crossing methods, selection systems and other tree improvement techniques.

217. Forest Management Plans. II. 2 hr. PR: For. 123. Analyses of forest management plans. Construction of a sustained yield timber management plan for a specific forest tract.

222. Forest Mensuration. II. 3 hr. PR: For. 21. The measurement of growth and yield; statistical methods applied to forest measurement problems.

231. Wood Microstructure. I. 3 hr. PR: For. 131, Senior standing, or consent. A detailed examination of wood microstructure as it relates to processing, behavior, and identification.

232. Mechanical Properties of Wood. I. 3 hr. PR: T.A.M. 102. Properties and behavior of wood as a structural material.

236. Advanced Wood Processes. I. 3 hr. PR: For. 136, Senior standing, or consent. Detailed study of the materials and processes involved in the manufacture of secondary wood products, using wood furniture as the primary example.

The Division of Home Economics

FACULTY

Mary Rose Jones, B.S., M.S., *Acting Director of the Division of Home Economics; Associate Professor of Home Economics* (1964), 1941.
Barbara N. Armstrong, B.S., M.S., *Instructor in Home Economics* (1962).
Gladys Raber Ayersman, B.S.H.E., M.S., *Assistant Professor of Home Economics* (1959), 1956.
Sara Ann Brown, B.S., M.S., Ph.D., *Professor of Home Economics Education* (1955), 1948.
M. Hilda Dailey, B.S., M.S., *State Extension Home Management Specialist* (1963).
Montelle Dietrich, B.S., M.S., *Associate Professor of Home Economics* (1962), 1929.
Babette Graf, B.S., M.S., *Assistant Professor of Home Economics* (1961).
Robert L. Jack, B.S., M.S., Ph.D., *Assistant Professor of Consumer Economics* (1963), 1959.
Ruth E. Knoch Jones, B.S., M.S., *State Extension Clothing Specialist* (1946).
Betty Lou Ramsey, B.S.H.E., M.S., *Assistant Professor of Home Economics* (1963), 1956.
Elizabeth Ann Roberts, B.S.H.E., M.S., *State Extension Foods and Nutrition Specialist* (1956), 1953.
Carl B. Taylor, A.B., M.A., Ph.D., *Assistant Professor of Family Life* (1961).
Ruth E. Weibel, B.S., M.S., *Instructor in Home Economics* (1962).
Elisabeth S. Yearick, B.S., M.S., Ph.D., *Associate Professor of Home Economics* (1959).

PURPOSE

The curriculum in the Division of Home Economics is designed to provide a professional education for persons expecting to work directly or indirectly with families in improving the quality of their living. The purpose of home economics is to assist individuals and families in developing satisfying relatonships within the family and between the family and other community institutions. It contributes to the creation of a physical environment conducive to the development of human resources. Home economists work through existing economic and social organizations to encourage the improvement of goods and services used by consumers and to provide leadership in teaching people to consume to meet their changing needs.

CAREERS

Home economists find professional opportunities in education, business and public service. They may work directly with families; specific age groups such as children, youth or aged; or individual consumers; and indirectly through educational programs in various communication media (radio, television, journalism). Home economists are employed as teachers, nursery school supervisors, extension workers, 4-H Club agents, YWCA workers, dietitians, home service representatives, radio and television programmers, interior designers, fashion coordinators, and buyers. Increasingly their competencies are being sought by international agencies such as the Peace Corps and other cultural and educational exchange programs.

FACILITIES

The Division of Home Economics is located in Oglebay Hall. Its specialized facilities include teaching laboratories for housing and design, clothing and textiles, food and nutrition, child development; a student lounge, and reading room.

Requirements for the Degree

Students have the choice of four options toward a degree in home economics: social science emphasis, physical science emphasis, art emphasis, or general. The degree granted is a Bachelor of Science. Students may also pursue a Bachelor of Arts degree with a major in home economics by fulfilling the requirements as set forth in the College of Arts and Sciences section of this bulletin.

Total hours in Home Economics	36
Total hours outside Home Economics	80
Electives	12
GRAND TOTAL	128

REQUIRED COURSES

	Hr.
I. University Core	
English Composition	6
Physical Education	4
Core Group A	12
Art, Music, Foreign Language, Literature, English Literature, Philosophy, Humanities	
Core Group B	12
Economics, Geography, History, Psychology, Political Science, Sociology, Social Science	
Core Group C	12
Biology, Chemistry, Geology, Mathematics, Physics, Physical Science	
TOTAL	46
II. Home Economics Professional Core	
1. Child Development and Family Relations 114	3
2. Clothing and Textiles 2 or 102	3
3. Food and Nutrition 1 or 135	3
4. Home Management & Family Economics 210 or 230	3
5. Housing and Design 3	3
TOTAL	15
III. Options	
a. Social Science Emphasis	
1. Additional courses in social science area	12
2. Additional courses in child development and family relations, home management and family economics areas	14
3. Electives	41
TOTAL	67
b. Physical Science Emphasis	
1. Additional courses in physical sciences, work in at least two fields	12
a. Biology, bacteriology, zoology, genetics	
b. Chemistry	
c. Mathematics, statistics, physics	
2. Additional courses in foods and nutrition	15
3. Speech	3
4. Electives	37
TOTAL	67

c. Art Emphasis
   1. Additional courses in at least two of the following areas: 21
      a. Accounting, marketing, journalism
      b. Art
      c. Psychology, sociology, history
   2. Additional courses in textiles and clothing, housing and design areas 15
   3. Speech 3
   4. Electives 28

TOTAL 67

d. General—Those wishing a vocational home economics teaching certificate must have at least 8 hours in each area of home economics in addition to the general and professional education requirements. (See College of Education section for details.)
   1. One additional 3 hour course in each area plus 6 hours of electives in home economics 21
   2. Electives 46

TOTAL 67

Courses of Instruction

FOOD AND NUTRITION

FN

1. ELEMENTARY NUTRITION. I, II. 3 hr. Essentials of adequate diet; applications are made with particular reference to needs of college students.

15. FOOD SELECTION AND PREPARATION. I, II. 3 hr. PR: 8 hr. of a laboratory science. (2 lec., 1 lab.). Basic principles of food selection, care and preparation. Emphasis is placed on the chemical and physical properties of foods and reactions which occur during processing.

108. QUANTITY COOKERY. II. 3 hr. PR: FN 115. (1 lec., two 3-hr. labs. arranged.). Application of principles to preparation of food in large quantities. Use of standardized formulae, calculation of costs, and use of institution equipment. Field trip included. Offered alternate odd years.

115. MEAL PLANNING, PREPARATION, AND SERVICE. I, II. 3 hr. PR: FN 15 or consent. (1 lec., 3-hr. lab.). Selection and purchase of foods; planning, preparing and serving meals with emphasis on time, energy, and money management.

121. NUTRITION AND THE FAMILY. II. 3 hr. PR: FN 1 or consent. A family-centered approach to nutrition, emphasizing the different needs of its members. Opporunity to explore nutritional problems and their solutions through contacts in the community.

128. INSTITUTIONAL BUYING. I. 2 hr. PR: FN 108. Producing areas, distribution of food products, specifications, storage and food practices in quantity buying. Observation in local wholesale markets, warehouses, and storage units. Offered in alternate odd years. Tour of market facilities in Pittsburgh area required.

135. FOOD AND PEOPLE. II. 3 hr. The cultural, social, ethnic, and economic problems involved in feeding families.

138. INSTITUTION ORGANIZATION AND MANAGEMENT. II. 3 hr. PR: FN 108. Principles of organization and management of food service. Field trip included. Offered alternate even years.

148. LABORATORY PRACTICE IN INSTITUTION MANAGEMENT. I, II. 2 hr. PR: FN 138 and consent. Experience under supervision in planning, preparing and serving food in an institution. Selection of place and type of experience to be determined by needs of students.

201. Diet Therapy. II. 3 hr. PR: FN 101, Zool. 271. Adaptations of normal diet for diseases whose prevention or treatment is largely influenced by diet. Offered in alternate odd years.

205. Experimental Cookery. II. 3 hr. PR: FN 15, Chem. 131, (1 hr. lec., 2 2-hr. labs.). Utensils, ingredients, temperature, manipulation, and cooking methods as they affect quality of cooked products. Offered in alternate odd years.

211. Readings in Nutrition. II. S. 1-4 hr. PR: FN 241 or consent. Review of current literature and of present research. Topics depend upon needs and interest of class members.

221. Community Nutrition Problems. I. 2 hr. PR: Consent. (2 hr. lec., field work.) Includes consideration of organizations and agencies through which these problems may be solved.

241. Nutrition. I. 3 hr. PR: One course in nutrition, biochemistry, and physiology. The role of food nutrients in the physiological and biochemical processes of the body; nutritional needs of healthy individuals under ordinary conditions and in periods of physiologic stress. Offered alternate even years.

281. Problems in Nutrition and/or Diet Therapy. 1-4 hr. PR: Consent.

285. Problems in Foods. 1-4 hr. PR: Consent.

288. Problems in Institution Management. 1-4 hr. PR: Consent.

TEXTILES AND CLOTHING

TC

2. Principles of Clothing Construction. I, II. 3 hr. (Three 2-hr. periods per week). Basic principles of clothing construction including pattern alteration and fitting. Placement tests will be given for sectioning.

17. Textiles. I, II. 3 hr. (2 lec., 1 lab.). Textile fibers and fabrics studied with view to their use in dress and in the home. Characteristics of the major fibers and their suitability to various uses. Study of standard and novelty materials with emphasis on appropriate use and care.

102. Clothing for the Family. I. 3 hr. (3 lec.). Clothing for the family in relation to the social, psychological, and economic factors including a study of the clothing industry, trends, and cultural significance. Field trip included.

212. Advanced Clothing Construction. II. 2 hr. PR: TC 232 or consent. Offers opportunity for creative expression and for understanding of pattern design through handling of fabrics on dress form. Costumes are designed, draped and constructed.

217. Textiles for Consumers. I. 3 hr. PR: TC 17. Acquaints students with the regulations, marketing channels, information sources, and new developments relevant to the selection of fabrics for household uses and wearing apparel. Discussion of current literature as it relates to buying fabrics for use in clothing and home furnishing.

222. Tailoring. II. 3 hr. PR: TC 2, 17. Tailoring of suits and coats. Emphasis placed on professional techniques, advanced fitting and construction of garments. Second garment constructed by fast method techniques.

232. Costume Design. I. 2 hr. PR: TC 2, 17. Techniques of figure and fashion drawing. Designing for individuals of various types and ages. Some history of costume included.

282. Problems in Clothing. 1-4 hr. PR: Consent.

287. Problems in Textiles. 1-4 hr. PR: Consent.

HOUSING AND DESIGN

HD

3. Introduction to Related Art. I, II. 3 hr. The use of the design elements and the application of the design principles to stimulate imagination and creative ability and to develop discriminating judgment in selection and arrangement of materials used for the individual and the home.

23. Housing Design. I, II. 3 hr. PR: HD 3 or consent. Housing and home planning as they relate to family living. Selection, arrangement, and use of the interior and exterior space for activities carried on, in, and around the home.

123. Interior Design. I. 3 hr. PR: HD 23 or consent. (2 lec., 1 lab.). The practical and aesthetic aspects of coordinating the furnishings, background, accessories, lighting, and space of a house for family living.

223. Advanced Interior Design. II. 3 hr. PR: HD 23, 123 or consent. A study of the technical and design information necessary to comprehend and function within the contemporary home furnishings market.

283. Problems in Housing and/or Design. 1-4 hr. PR: Consent.

CHILD DEVELOPMENT AND FAMILY RELATIONS

CDFR

106. Child Development. I, II. 3 hr. PR: Psych. 1 or 3, or Ed. 105 or consent. (2 lec. and 1 2-hr. lab. arr.). Principles of development during childhood including physical, psychological, and social factors affecting behavior. Observation and participation in the University Nursery School.

114. Family Relations. I, II. 3 hr. An introductory course in the study of marriage and the family. Attention is placed particularly on mate selection, the interplay of social roles in family relations, and problems of decision-making and adjustment arising out of the demands of the contemporary social setting.

126. Infant Development. I. 2 hr. (1 lec., 1 lab.). Development characteristics and problems during the prenatal period and the first eighteen months with implications for guidance and care.

224. Family and the Individual in the Community. I. 3 hr. PR: One course in the family, or sociology, or consent. Social psychological analysis of the individual in the family and in other social systems. Involves the study of role relationships, community processes and attitudes and values as they affect the behavior of the individual.

264. Family Development. I, II. 3 hr. PR: CDFR 114 or consent. A professional course designed to prepare students for work with families in their varying stages of development and different socio-economic levels. Involves intensive study of family relationships as affected by differing stages of the family life cycle, from beginning family through the aging couple. Lecture, discussion, and observation of families.

266. Needs of Adolescents. I, II. 3 hr. A study of adolescent needs as met by the home with contributions of other agencies such as church, school and youth groups. Physical, social, and integrative needs will be considered from the standpoint of needs of all family members as well as the individual.

276. Seminar in Child Development. II. 2 hr. PR: Senior standing and consent. A review and discussion of recent literature pertaining to child development. Offered in alternate years.

284. Problems in Family Relations. 1-4 hr. PR: Consent.

286. Problems in Child Development. 1-4 hr. PR: Consent.

HOME MANAGEMENT AND FAMILY ECONOMICS

HMFE

120. Communication of Consumer Information. I, II. 2 hr. PR: Min. of 4 hr. in each of four areas of home economics, or consent. Techniques of communicating ideas and information relative to goods and services available to the consumer. Emphasis upon demonstration technique.

210. Family Economics. I, II. 3 hr. PR: Senior or graduate standing. Management of the family's money resources. Consideration of the economic problems of families, of planned spending and saving, and of the role of the consumer.

230. Home Management, Principles and Application. I, II. PR: Upper-division standing. Study and application of management in a variety of situations faced by the family with opportunity to integrate knowledge from other courses.

250. Household Equipment. I, II. 2 hr. Selection, arrangement, use and care of equipment for various situations and for different income levels. Lecture, laboratory, and discussion.

280. Problems in Home Management and/or Family Economics. 1-4 hr. PR: Consent.

HOME ECONOMICS EDUCATION

Ed. 262. Vocational Home Economics in Secondary Schools. II. 3 hr. PR (or parallel): Ed. 120, 124, 163, 25 hr. in Home Economics.

HEEd.

209. Evaluation in Home Economics. II. 3 hr. PR: 30 hr. of home economics, 7 hr. of education. Experience in selecting, devising, and using evaluation devices for appraising student progress toward desired goals in home economics. Offered alternate odd years.

219. Adult Education in Homemaking. I. 3 hr. PR: 30 hr. of home economics, 7 hr. of education. Current trends and present activities. Organization of adult classes; development of unit outlines; consideration of teaching methods; illustrative material and bibliography. Offered alternate even years.

279. Seminar in Home Economics Education. II. S. 3 hr. PR: Senior standing and 6 hours of education. A review and discussion of recent literature pertaining to home economics at the junior and senior high school levels and the college and adult levels based on the history of the home economics movement from the Lake Placid Conference in 1909 to the present time.

HONORS PROGRAM

100. Home Economics Honors Program. 3 hr. PR: Second-semester junior standing; at least 2 academic years in residence at West Virginia University; overall grade-point average 3.0 or better; grade-point average in home economics courses 3.20 or better. Individual special problems for undergraduates of second-semester junior standing who show special ability and interest in one of the following fields: child development, home economics education, or nutrition. Admission dependent only upon the recommendation of the adviser and the Honors Course Committee. Hours arranged.

110. Home Economics Honors Program. 3 hr. PR: First-semester senior standing; overall grade-point average of 3.0 or better; grade-point average in home economics courses 3.25 or better, and Home Econ. 100. Individual special problems for undergraduates of first-semester senior standing who show special ability and interest in one of the following fields: child development, home economics education, or nutrition. Admission only upon the recommendation of the adviser and the Honors Course Committee. Hours arranged.

120. Home Economics Honors Program. 3 hr. PR: Second-semester senior standing; overall grade-point average of 3.0 or better; grade-point average in home economics courses 3.25 or better; Home Econ. 110. Individual special problems for undergraduates of second-semester senior standing who show special ability and interest in one of the following fields: child development, home economics education, or nutrition. Admission only upon the recommendation of the adviser and the Honors Course Committee. Hours arranged.

The Appalachian Center

THE STAFF

Ernest J. Nesius, B.S.A., M.S.A., Ph.D., *Vice President, West Virginia Center for Appalachian Studies and Development; Director, Cooperative Extension Service* (1963), 1960.

Office of Research and Development

John C. Ludlum, B.S., M.S., Ph.D., *Director of Office of Research and Development; Professor of Geology* (1962), 1946.

Chester L. Dodson, B.S., M.S., *Assistant Research Professor of Hydrology, Office of Research and Development; Assistant Professor of Geology* (1964), 1950.

Robert G. Dyck, A.B., B.Arch., MCP, *Assistant Professor of Planning* (1963).

H. Milton Patton, B.A., MCP, *Assistant Professor and Research Planner, Office of Research and Development* (1964).

Cooperative Extension Service

Roman J. Verhaalen, B.A., M.A., Ph.D., *Dean of Extension Services; Associate Director, Cooperative Extension Service; Professor of Education* (1964).

Herman M. Bowers, B.S.Agr., *Assistant Director, Cooperative Extension Service* (1951), 1929.

B. L. Coffindaffer, B.S., M.S., Ph.D., *Director, Parkersburg Branch; Director, Parkersburg Area Appalachian Center* (1964), 1950.

William H. Conkle, B.S., M.S., Ph.D., *Director, Keyser Area Appalachian Center* (1964), 1941.

C. P. Dorsey, B.S.Agr., M.S.Agr., *State Extension Leader—4-H* (1952), 1927.

Edsel Gainer, B.S., M.S., *Director, Weston Area Appalachian Center* (1964), 1961.

Eleanor M. Glenn, B.S.H.E., *State Extension Program Leader—Home Demonstration* (1961), 1926.

John J. Harvey, B.S., M.S., Ph.D., *State Extension Program Leader—Training; Associate Professor of Agricultural Education* (1961), 1953.

Gertrude Humphreys, A.B., *State Extension Leader—Home Demonstration* (1933), 1926.

Oscar C. Hutchison, B.S., *Director, Beckley Area Appalachian Center* (1964), 1961.

Claude R. Kemper, B.S.Agr., M.S.Agr., *Assistant to the Vice President; Director, Programs Audit* (1964), 1946.

Joseph L. Morris, B.S., M.S.Agr., *Director, Morgantown Area Appalachian Center* (1964), 1954.

Helen Quarrick, B.S.H.E., M.S., *State Extension Program Leader—Home Demonstration* (1962), 1955.

Richard H. Slavin, A.B., M.A., Ph.D., *Director, Charleston Area Appalachian Center; Associate Professor of Economics* (1964), 1963.

Leighton G. Watson, A.B., *State Extension Editor; Head, Communications and Visual Aids* (1963), 1938.

Royce J. Watts, B.S., M.S., *Assistant to the Vice President; Head, Office of Business Relations and Records; Assistant Professor of Statistics* (1964), 1955.

PROGRAM SERVICES

Robert O. Adamson, B.S., *State Extension Specialist—Animal Husbandry* (1964).

Elizabeth Roberts Bare, B.S.H.E., M.S., *State Extension Specialist—Foods and Nutrition* (1956), 1953.

Joseph G. Barrat, B.S., M.S., Ph.D., *State Extension Specialist—Plant Pathology, West Virginia Experiment Farm* (1958).

Waldo E. Bell, B.S.Agr.Eng'g., *State Extension Specialist—Agricultural Engineering* (1945).

H. Philip Berthy, B.S.F., M.S., *State Extension Specialist—Wood Utilization* (1963), 1950.

Francis L. Blake, B.S.J., *State Extension Editor—Radio-Television* (1964), 1962.
Joanne W. Bowie, A.B., *State Extension Editor—4-H and Home Economics* (1959).
George H. Breiding, B.S., *State Extension Program Leader—Outdoor Recreation* (1963), 1950.
Clifford W. Collier, Jr., B.F.A., M.L.A., *State Extension Specialist—Landscape Architecture* (1960).
David R. Creel, *Photographer* (1947),
Harley V. Cutlip, A.B., M.S., *State Extension Program Leader—4-H and Camp Director, State 4-H Camp; Instructor in Rural Sociology* (1955), 1943.
M. Hilda Dailey, B.S., M.S., *State Extension Specialist—Home Management* (1963).
Joseph C. Emch, B.S., M.S., *State Extension Specialist—Animal Husbandry* (1953), 1947.
Joseph L. Fasching, B.S.J., *State Extension Editor—News* (1962).
Mildred Fizer, A.B., M.S., *State Extension Program Leader—4-H* (1953), 1946.
Betty A. Gum, B.S.Agr., B.S.Ed., M.A., *State Extension Editor—Project Development* (1963), 1947.
N. Carl Hardin, Jr., B.S., M.S., *State Extension Specialist—Horticulture* (1960), 1958.
Ted R. Hash, B.S., *State Extension Specialist—Poultry* (1947), 1937.
Bruce M. John, B.S., M.S., *State Extension Specialist—Rural Sociology* (1963).
Ruth K. Jones, B.S., M.S., *State Extension Specialist—Clothing* (1946), 1941.
William E. Kidd, Jr., B.S.F., *State Extension Specialist—Forestry* (1965).
Tanner J. Livisay, B.S., M.S., *State Extension Specialist—Child Development and Human Relations* (1963), 1942.
Elmo W. Miller, B.S., M.S.Agr., *State Extension Program Leader—Rural Civil Defense* (1963), 1954.
Byron W. Moore, B.S.Agr., M.S., *State Extension Specialist—Poultry* (1962), 1947.
Foster G. Mullenax, B.S.Agr., *State Extension Editor—Radio-Television* (1963), 1950.
William L. Northern, B.S., M.Agr., *State Extension Specialist—Dairy* (1962), 1951.
Farrel J. Olsen, Jr., B.S., M.S., Ph.D., *State Extension Specialist—Agronomy* (1961).
David O. Quinn, A.B., M.S., *State Extension Specialist—Plant Pathology and Entomology* (1956), 1953.
Arthur W. Selders, B.S.Agr., M.S.Agr.Eng'g., *State Extension Specialist—Agricultural Engineering* (1963).
George Sharpe, B.S.Agr., M.S., *State Extension Specialist—Soil Conservation* (1944), 1929.
Vernon M. Sheppard, Jr., B.S., M.S., *State Extension Specialist—Agricultural Economics* (1964), 1958.
Glenn Snyder, Jr., B.S., *State Extension Program Leader—4-H* (1963), 1957.
Ronald L. Stump, B.S., M.S., *State Extension Program Leader—Economic Development* (1962), 1948.
J. Franklin Wade, Jr., B.S.Agr., M.S., *State Extension Program Leader—Safe Use of Pesticides and Chemicals* (1965), 1955.
Benjamin W. Wamsley, Jr., B.S., M.S., *State Extension Specialist—Animal Husbandry* (1957), 1948.

COUNTY EXTENSION WORKERS

Barbour County

Rella L. Butcher, B.S.H.E., *County Extension Agent—Home Demonstration* (1942); John L. Loyd, B.S., *County Extension Agent—4-H* (1956).

Berkeley County

Franz I. Taylor, B.S., M.S., *County Extension Agent* (1942), 1941; Eugene J. Harner, B.S., M.S., *Associate Extension Agent—Agriculture* (1954); Velma B. Johnson, B.S.H.E., *County Extension Agent—Home Demonstration* (1935); A. R. Brannon, B.S., *County Extension Agent—4-H* (1954).

Boone County

Rose Marie Sheets, B.S.H.E., *County Extension Agent—4-H* (1963).

BRAXTON COUNTY

PAUL E. SWECKER, B.S., M.S., *County Extension Agent* (1963), 1956; THOMAS C. GAWTHROP, B.A., *County Extension Agent—4-H* (1961).

BROOKE COUNTY

GEORGE C. MOUSER, B.S.AGR., M.S.AGR., *County Extension Agent* (1963); EMMA L. NOE, B.S.H.E., *County Extension Agent—Home Demonstration* (1956).

CABELL COUNTY

ROSCOE F. DODDRILL, B.S.AGR., *County Extension Agent* (1953), 1943; BETTY P. CRICKARD, B.S., M.E., *County Extension Agent—Home Demonstration* (1964), 1951; VIOLET R. BRANDON, A.B., *County Extension Agent—4-H* (1954), 1942.

CALHOUN COUNTY

JAMES D. STILES, B.S., M.S., *County Extension Agent* (1962), 1958; JANE E. JONES, B.S.H.E., *County Extension Agent—Home Demonstration* (1954).

CLAY COUNTY

PAUL A. ALLEN, B.S., M.S., *County Extension Agent* (1954), 1951; MARGIE LOUISE CRAWFORD, B.S., *County Extension Agent—4-H* (1959).

DODDRIDGE COUNTY

J. KEITH HARVEY, B.S., M.S., *County Extension Agent* (1952); BETTY J. RALSTON, B.S.H.E., *County Extension Agent—Home Demonstration* (1963), 1958.

FAYETTE COUNTY

HERBERT L. RIGGLE, B.S.AGR., *County Extension Agent* (1958), 1923; BEATRICE F. WHANGER, B.S.H.E., *County Extension Agent—Home Demonstration* (1959), 1930; ETHEL H. BANKS, B.S., *County Extension Agent—Home Demonstration* (1951); JOHN D. CUTLIP, A.B., *County Extension Agent—4-H* (1962), 1959. (On study leave).

GILMER COUNTY

HARLAN B. HOGUE, B.S., *County Extension Agent* (1935); FREDA BURKE, A.B., *County Extension Agent—4-H* (1950).

GRANT COUNTY

RAYMOND E. SPENCER, B.S., M.S., *County Extension Agent* (1949), 1947; MARGARET A. CALLISON, A.B., *County Extension Agent—Home Demonstration* (1958).

GREENBRIER COUNTY

JAMES M. VANMETRE, B.S., *County Extension Agent* (1958), 1954; HENRY ALLEN ROUSH, B.S., *Associate County Agent—Agriculture* (1958); VIVIAN M. RICHARDSON, B.S.H.E., *County Extension Agent—Home Demonstration* (1956), 1934; JAMES E. JOHNSON, B.S., *County Extension Agent—4-H* (1948); HILDA G. SCOTT, B.S., *County Extension Agent—4-H* (1964).

HAMPSHIRE COUNTY

S. PORTER SMITH, B.S., M.S., *County Extension Agent* (1950), 1949; MAXINE R. STROTHER, B.S.H.E., *County Extension Agent—Home Demonstration* (1940).

HANCOCK COUNTY

OLIVER W. JOHNSON, B.S., *County Extension Agent* (1935); RUTH MCPHERSON, A.B., *County Extension Agent—4-H* (1961), 1953.

HARDY COUNTY

WILLIAM L. CLARK, B.S., M.S., *County Extension Agent* (1953), 1951; ANNIE H. SHOBE, A.B., *County Extension Agent—Home Demonstration* (1954), 1932; HOWARD B. HARDY, B.S., *County Extension Agent—4-H* (1959).

HARRISON COUNTY

VERNON A. TACY, B.S.AGR., *County Extension Agent* (1956), 1955; JERRY LEROY LEASE, B.S.AGR., *Assistant County Extension Agent—Agriculture* (1962); MABEL E. HILLER, B.S., *County Extension Agent—Home Demonstration* (1926), 1924; JOHN WILLIAM CLARK, B.S., *County Extension Agent—4-H* (1958); ELIZABETH SUSAN SHARPE, B.S., M.S., *County Extension Agent—4-H* (1963).

JACKSON COUNTY

NORMAN K. SPEICHER, B.S., *County Extension Agent* (1943); SHIRLEY R. CAMPBELL, A.B., *County Extension Agent—Home Demonstration* (1964); LOWELL R. SHAW, B.S., *County Extension Agent—4-H* (1964).

JEFFERSON COUNTY

J. E. SAVILLE, B.A., M.S., *County Extension Agent* (1947), 1942; MARIAN E. MYERS, B.S., *County Extension Agent—4-H* (1954); VICTORIA G. GOENS, A.B., *County Extension Agent—4-H* (Berkeley, Jefferson, Morgan) (1944).

KANAWHA COUNTY

BROOKS DAUGHERTY, B.S.AGR., *County Extension Agent* (1935); CAMILLE C. STEWART, A.B., *County Extension Agent—Home Demonstration* (1963), 1950; JACQUELINE J. HUNT, A.B., *County Extension Agent—4-H* (1948); CHARLES B. MAXWELL, A.B., *County Extension Agent—4-H* (1948); WILMA M. FERRARI, B.S., *County Extension Agent—4-H* (1964); JULIA H. LOWERY, B.S., *County Extension Agent—Home Demonstration* (Cabell, Kanawha) (1943).

LEWIS COUNTY

LYNN SPIKER, B.S., *County Extension Agent* (1938); CAROLINE W. SCHNABLY, B.S.H.E., *County Extension Agent—Home Demonstration* (1954), 1952; ALETA S. DETAMORE, A.B., *County Extension Agent—4-H* (1960).

LINCOLN COUNTY

JOHN M. CURRY, B.S., M.S., *County Extension Agent* (1958), 1937; WYLENE P. DIAL, B.B., *County Extension Agent—4-H* (1957).

LOGAN COUNTY

VORAS K. HAYNES, B.S., *County Extension Agent* (1962); JANIE E. HENDERSON, B.S., *County Extension Agent—Home Demonstration* (Boone, Logan, Mingo) (1953).

MCDOWELL COUNTY

ARTHUR DENNIS MCCUTCHEON, B.S., B.R.E., *County Extension Agent* (1961); ANNA LEE BROWN, B.S., *County Extension Agent—Home Demonstration* (1963); BILLIE J. HAIRSTON, B.S., *County Extension Agent—4-H* (1954); IDA E. HOLCOMBE, B.S., *County Extension Agent—Home Demonstration* (1943).

MARION COUNTY

DAYTON J. MICHAEL, B.S.AGR., *County Extension Agent* (1963); CAROL M. CECIL, A.B., *County Extension Agent—Home Demonstration* (1962); FAIRY A. DOWNS, A.B., M.A., *County Extension Agent—4-H* (1958); GERALDINE BELMEAR, B.S., M.S., *Area Extension Agent—Home Economics* (Barbour, Harrison, Marion, Monongalia, Taylor) (1962), 1949; JANIE V. CARTER, A.B., *County Extension Agent—4-H* (Marion, Monongalia) (1963), 1957.

MARSHALL COUNTY

DONALD A. HUTCHISON, B.S., M.S., *County Extension Agent* (1950), 1949; HALLEY J. HUBBS, A.B., *County Extension Agent—4-H* (1945); REBECCA S. RIGGS, B.S.H.E., *County Extension Agent—Home Demonstration* (1964).

MASON COUNTY

CARL H. COOK, B.S.AGR., *County Extension Agent* (1962); WANDA R. STEMPLE, B.S., *County Extension Agent—Home Demonstration* (1960); GILBERT V. BARNETTE, B.S., *County Extension Agent—4-H* (1957).

MERCER COUNTY

RICHARD E. HARBERT, B.S., *County Extension Agent* (1947); MARGARET M. MEADOR, B.S., *County Extension Agent—Home Demonstration* (1964), 1963; CLIFTON DOTSON, *County Extension Agent—4-H* (1942); MARY C. REED, B.S., *County Extension Agent—Home Demonstration* (Mercer, Wyoming) (1959).

MINERAL COUNTY

EMERY L. PRUNTY, B.S.A.H., *County Extension Agent* (1962), 1959; BETTY J. QUEEN, B.S.H.E., *County Extension Agent—Home Demonstration* (1959).

MINGO COUNTY

RICHARD H. CUTLIP, B.S., *County Extension Agent* (1959).

MONONGALIA COUNTY

BURKEY LILLY, B.S., M.S., *County Extension Agent* (1958), 1954; KATHARINE C. STUMP, B.S.H.E., *County Extension Agent—Home Demonstration* (1923); BARBARA NOLL, B.S.H.E., *County Extension Agent—4-H* (1964).

MONROE COUNTY

CHESLEIGH R. RIPLEY, B.S.AGR., *County Extension Agent* (1935); ELEANOR J. SHANKLIN, B.A., B.S., *County Extension Agent—Home Demonstration* (1952); HOWARD M. LESTER, B.S., *County Extension Agent—4-H* (1962).

NICHOLAS COUNTY

NORMAN L. REXRODE, B.S., M.S., *County Extension Agent* (1957), 1955; HELEN F. COLE, B.S., M.S., *County Extension Agent—Home Demonstration* (1946); B. RUSH BUTCHER, B.S., M.S., *County Extension Agent—4-H* (1951).

OHIO COUNTY

CORNELIUS J. CUNNINGHAM, JR., B.S., M.S., *County Extension Agent* (1963), 1962; HARRIETTE A. TIMBROOK, A.A., B.S., *County Extension Agent—Home Demonstration* (1960); MARY D. CONRAD, B.S., *County Extension Agent—4-H* (1962), 1936.

PENDLETON COUNTY

JOHN W. HAMMER, SR., B.S., M.S., *County Extension Agent* (1946), 1940; HARRIET W. MCCOY, B.S., *County Extension Agent—Home Demonstration* (1954).

PLEASANTS COUNTY

L. WILLIAM CORBIN, B.S., M.S.AGR., *County Extension Agent* (1950), 1948.

POCAHONTAS COUNTY

WALTER E. JETT, B.S., *County Extension Agent* (1942), 1941; BETTY R. WEIFORD, A.B., *County Extension Agent—Home Demonstration* (1952).

PRESTON COUNTY

ALTON J. ANDERSON, B.S.AGR., *County Extension Agent* (1953); CLIFFORD K. BUCKLEW, B.S., *County Extension Agent—4-H* (1957); MILDRED ANN THORNTON, B.S., *County Extension Agent—Home Demonstration* (1964).

PUTNAM COUNTY

WILLIAM P. JOHNSTON, B.S., *County Extension Agent* (1950), 1949; NEOMA S. ASH, B.S., *County Extension Agent—Home Demonstration* (1961); LEE EVANGELINE HEDRICK, B.S., *County Extension Agent—4-H* (1953).

RALEIGH COUNTY

LAWRENCE S. CAVENDISH, B.S., M.S., *County Extension Agent* (1964); GUSTINE B. ELLIOTT, B.S., *County Extension Agent—Home Demonstration* (1954); MARY N. GODBEY, B.S.H.E., *County Extension Agent—Home Demonstration* (1963); WILLIAM G. CLARK, B.S., *County Extension Agent—4-H* (1958).

RANDOLPH COUNTY

ROBERT L. HAMMER, B.S., *County Extension Agent* (1938), 1937; ALICE T. HORNER, A.B., *County Extension Agent—Home Demonstration* (1944); CHARLES E. WILLIAMS, B.A., *County Extension Agent—4-H* (1963).

RITCHIE COUNTY

FERMAN C. RICE, *County Extension Agent* (1944); AUBRY A. WILSON, B.S., M.S., *County Extension Agent—4-H* (1957); BEVERLY ANNETTE SHIPE, B.S.H.E., *County Extension Agent—Home Demonstration* (1963).

ROANE COUNTY

ORA A. DRAKE, B.S., *County Extension Agent—Home Demonstration* (1959); NEIL G. HEDRICK, B.S., M.S., *County Extension Agent—4-H* (1957).

SUMMERS COUNTY

ROBERT M. BABER, B.S., *County Extension Agent* (1961), 1959; EUGENE H. MITCHELL, B.S., M.S., *County Extension Agent* (Greenbrier, Monroe, Pocahontas, Summers) (1949).

TAYLOR COUNTY

WOODBRIDGE STOUT, M.S., *County Extension Agent* (1954), 1951; HELEN H. FLEMING, B.S.H.E., M.S.H.E.E., *County Extension Agent—Home Demonstration* (1954), 1952.

TUCKER COUNTY

RALPH H. DUNKLE, B.S., *County Extension Agent* (1962), 1959.

TYLER COUNTY

HAYWARD H. HUFF, B.S., *County Extension Agent* (1934), 1932; ANN J. THOMAS, A.B., *County Extension Agent—Home Demonstration* (1958).

UPSHUR COUNTY

NORVIN L. BOWYER, B.S., M.S., *County Extension Agent* (1954), (On study leave); BARBARA A. JUDY, B.S.H.E., *County Extension Agent—Home Demonstration* (1964), 1963; ANCIL B. CUTLIP, B.S., M.S., *County Extension Agent—4-H* (1961), 1958.

WAYNE COUNTY

CYRUS CRUM, B.S., *County Extension Agent* (1952); BETTY N. SMITH, A.A., A.B., *County Extension Agent—4-H* (1961).

WEBSTER COUNTY

HARLEY A. BURTON, B.S.AGR., *County Extension Agent* (1931); THELMA R. PICKENS, *County Extension Agent—4-H* (1940).

WETZEL COUNTY

DALE T. BONNETT, B.S., *County Extension Agent* (1955); BARBARA J. POWELL, A.B., *County Extension Agent—Home Demonstration* (1957).

WIRT COUNTY

IRA V. KIMBLE, B.S.AGR., *County Extension Agent* (1952).

WOOD COUNTY

HOWARD A. SHRIVER, B.S., *County Extension Agent* (1962), 1958; MARTHA KATE CLARK, B.S., M.S., *County Extension Agent—Home Demonstration* (1961), 1957; JOAN B. BAKER, B.A., *County Extension Agent—4-H* (1964).

WYOMING COUNTY

ROSCOE K. PLUMLEY, B.S., *County Extension Agent* (1960); VICTOR H. GILKESON, JR., A.B., M.A., *County Extension Agent—4-H* (McDowell, Wyoming) (1964).

AREA EXTENSION AGENTS

George D. Siehl, B.S., (Fayette, Raleigh, Summers) (1961), 1954.
George A. Stickler, B.S., (Grant, Hampshire, Hardy, Mineral) (1962), 1956.

AREA EXTENSION SPECIALISTS

Donald L. Fogus, B.S., *Area Extension Specialist—Forestry* (Pocahontas, Randolph, Tucker) (1961).
Joseph Neil Yeager, B.S., *Area Extension Specialist—Forestry* (Lewis, Braxton, Gilmer, Nicholas, Upshur, Webster) (1964), 1960.
Ernie B. McCue, A.B., M.A., *Area Specialist—Reading and Science Education* (1964), 1947.
John R. Schabinger, B.S., M.S., Ph.D., *Area Extension Specialist—Dairy* (1964).

CHARLESTON AREA APPALACHIAN CENTER

Mary V. Pullen, B.S., M.S., *West Virginia University Extension Agent* (1964), 1963.
Glenwood B. Rinard, B.S., *West Virginia University Extension Agent* (1964).

University Extension and Continuing Education

Roman J. Verhaalen, B.A., M.A., Ph.D., *Dean of Extension Services; Associate Director, Cooperative Extension Service; Professor of Education* (1964).
Keith E. Glancy, B.S., M.S., Ph.D., *State Chairman, Continuing Education and Extended Credit Programs; Associate Professor of Education* (1965).
Gordon Corbitt, A.B., M.A., Ed.D., *Instructor in University Extension* (part-time) (1964).
Carl P. Cummings, A.B., M.A., *Assistant Professor of Mathematics* (1964).
George E. Fore, B.S., *Instructor, Radiological Monitoring, Civil Defense* (1963).
Elizabeth J. Goodall, A.B., M.A., *Associate Professor, History* (1945).
Lynn Keyser, A.B., *Instructor, Civil Defense* (1963).
George E. Kirk, B.S., M.B.A., *Assistant Professor of Management* (1964).
Stanley H. Livingston, A.B., *Coordinator, Civil Defense* (1963).
Francis H. McClung, B.S., M.S., *Assistant Professor of Education* (1956).
Martin M. Mansperger, B.S.Ed., M.A., *Associate Professor of Education* (1962), 1952.
Edward A. Sprague, B.S., M.S., *Associate Professor of Music, Director of Music Education* (1964), 1962.
James W. Wright, A.B., D.D., B.D., A.M., *Associate Professor of Sociology* (1947).

INSTITUTE FOR LABOR STUDIES

Frederick A. Zeller, B.S.C., M.A., Ph.D., *Director, Institute for Labor Studies; Associate Professor of Economics* (1965).
Frank L. Collins, A.B., M.A., *Labor Studies Specialist* (1964).
John R. MacKenzie, B.A., *Labor Studies Specialist* (1964).

MINING AND INDUSTRIAL EXTENSION SERVICE

Charles T. Holland, B.S.E.M., M.S.E.M., *Director, Mining and Industrial Extension Service; Dean, School of Mines; Professor of Mining Engineering* (1961), 1930.
Claude A. Goode, B.S., B.S.E.M., *Assistant Director of Mining Extension* (1961), 1956.
Roscoe E. Hanna, Jr., B.S., *Supervisor, Industrial Extension; Assistant Director of Fire Service Extension* (1949), 1944.
Ralph C. Bierer, *Instructor, Mining Extension* (1952).
Leslie E. Bradley, A.B., *Instructor, Mining Extension* (1945).
Ulysses G. Carter, B.S., *Instructor, Mining Extension* (1957).
Luther B. Ferguson, *Instructor, Mining Extension* (1957).
William M. MacKenzie, *Instructor, Mining Extension* (1945).
Peter C. Mintreas, B.S., *Instructor, Mining Extension* (1961).
James M. Morrison, *Instructor, Mining Extension* (1958).
George H. Pudlo, B.S.E.M., *Instructor in Mining and Industrial Extension Service* (1964).

Raymond A. Simpson, *Instructor in Fire Extension* (1962).
Hobart Watson, *Instructor in Mining Extension* (1925).
Leland H. Winter, B.S.E.E., *Instructor in Mining Extension* (1952).

OFFICE OF INTERNATIONAL PROGRAMS

Ralph E. Nelson, B.S., M.S., Ph.D., *Campus Coordinator, East African Programs* (1964).
Robert Allen, B.S., M.B.A., *Contract Auditor* (1964).
Paul V. Armbrester, B.S., M.S., *Assistant Professor and Lecturer in Extension Methods and Animal Production, Arapai Agricultural College, Uganda* (1963).
Newton M. Baughman, B.S., M.S., Ph.D., *Chief of Party, WVU—Agency for International Development Contract, Tanzania* (1964), 1949.
Francis W. Bennett, B.S., M.S., *Lecturer in Agricultural Mechanics, Arapai Agricultural College, Soroti, Uganda* (1964).
Lenrod L. Blowe, B.S., *Vocational Agriculture Instructor, Kenya* (1964).
Robert H. Burns, B.S., *Vocational Agriculture Instructor, Kenya* (1964).
Albert G. Canaris, B.S., M.A., Ph.D., *Associate Professor of Zoology and Chief of Party, Egerton College, Kenya* (1963), 1962.
Gene A. Casto, B.S., M.S., *Assistant Professor of Agricultural Education and Lecturer in Extension Methods and Crop Production, Bukalasa Agricultural College, Uganda* (1963).
William L. Cones, B.S.F., M.F., *Instructor in Forestry, Egerton College, Kenya* (1963), 1962.
Chester Cromer, B.S., *Assistant Professor of Agricultural Engineering, Morogoro, Tanzania* (1964).
Wilbur D. Dye, B.S., M.S., *Instructor in Animal Husbandry, Morogoro, Tanzania* (1964).
Russell G. Ellyson, B.S.Agr., *Technical Leader, Tanzanian Students* (1963), 1934.
Perry S. Flegal, B.S., M.S., *Instructor in Vocational Agriculture, Kenya* (1964).
Jack M. Gay, B.S., M.S., *Instructor in Animal Husbandry, Bukalasa Agricultural College, Uganda* (1964).
Robert L. Gay, B.S., D.V.M., *Animal Husbandry Advisor, Bukalasa Agricultural College, Uganda* (1964).
Glen H. Hetzel, B.S., *Instructor in Agricultural Engineering, Kenya* (1962).
Frederick P. Holmes, B.S., M.S., *Instructor in Vocational Agriculture, Bukalasa Agricultural College, Uganda* (1964).
Wesley Lynch, B.S., M.S., *Contract Overseas Representative, Peace Corps, Arusha, Tanzania* (1964), 1949.
Robert H. Maxwell, B.S., M.S., *Chief of Party, Vocational Agriculture Project, Kenya* (1964).
Galen S. Myers, B.S.Agr., M.S., *Lecturer in Extension Methods, Arapai Agricultural College, Uganda* (1964), 1955.
Conn Price, B.S., M.S., *Vocational Agriculture Instructor, Kenya* (1964).
Jay Martin Reid, B.S., *Vocational Agriculture Instructor, Kenya* (1964).
Arnold Gerhard Scholten, B.S., M.S., Ph.D., *Assistant Professor of Agronomy, Bukalasa Agricultural College, Uganda* (1965).
Gerald E. Thierstein, B.S., *Assistant Professor, Agricultural Engineering, Egerton College, Kenya* (1962).
Siegbert A. Thies, B.S., M.S., *Farm Management Specialist, Tanzania* (1964).
Otto V. Vande Linde, Jr., B.S., A.M., *Associate Professor of Farm Management and Conservation, Arapai Agricultural College, Uganda* (1963).
James A. Welch, B.S.Agr., Ph.D., *Professor of Animal Science, Chief of Party, Entebbe, Uganda* (1963), 1952.
Frank E. Woodson, B.S., D.V.M., *Assistant Professor of Veterinary Science, Entebbe, Uganda* (1963).

CONTINUING LEGAL EDUCATION

William E. Johnson, A.B., LL.B., *Director of Continuing Legal Education* (1963).

KANAWHA VALLEY GRADUATE CENTER

Walter H. Walker, A.B., B.S., M.A., Ph.D., *Director, Kanawha Valley Graduate Center and Lecturer in Chemistry* (1960).

PARKERSBURG BRANCH

B. L. Coffindaffer, B.S., M.S., Ph.D., *Director, Parkersburg Branch; Director, Area Appalachian Center* (1964), 1950.
Maurice G. Powell, B.S., M.S., Ph.D , *Chairman, Faculty and Programs and Assistant Professor of Chemistry, Parkersburg Branch* (1962).
Katharine Pancake Carmichael, B.A., M.A., *Instructor in English* (1964).
Merle Evelyn Daugherty, A.B., M.A., *Instructor in English* (1961).
James H. Fortune, B.S., M.S., *Instructor in Mathematics* (1962).
Harold W. Metz, A.B., M.Ed., *Instructor, Psychology* (1964).
Charlotte Anne Piersol, *Assistant Librarian* (1964).
John O. Roach, II, A.B., M.A., *Instructor in History* (1964).
William R. Ross, M.A., *Associate Professor of Political Science* (1963), 1939.
David C. Tenney, A.B., *Instructor in Physics* (1964), 1962.

General Information

The West Virginia Center for Appalachian Studies and Development was established in 1963.

This intra-University organization, called Appalachian Center, was established to identify, regroup, and to set into coordinated purposeful action those major activities which relate the University to the State and to the Appalachian region. The Appalachian Center concept embodies a realignment and concentration of those University functions which are oriented toward direct public service. It mobilizes into one coordinated effort all special public service skills—extension, consulting, research, and planning—so as to bring them to bear on meeting the public needs of the present and for defining public goals for the future.

It aims to be a vital force in the destiny of West Virginia. The University plans to exercise every possible effort to project knowledge into life's daily experiences. The points of focus will be the people's attitudes, the human and natural resources, the capital base, and international affairs.

Its objectives are: to help to determine the key issues, problems, and opportunities basic to West Virginia's future; to provide maximum encouragement to the economic, social, cultural, and political development of West Virginia through discovery and dissemination of knowledge using inter-disciplinary task forces and competent resources; to be a vehicle for generating continuous Statewide planning, goal setting, and intensive discussion; to organize and encourage continuing lifelong education as essential to life's experiences; identify leaders, equip them intellectually, impart skills, and keep them competent; to encourage development of various arrangements within the University in order that academic and public concerns go hand-in-hand; to insure the concerted and unified participation of those divisions of West Virginia University which are directly concerned with the relationships between University and State; to involve and support State educational institutions, State and federal agencies, and community organizations in unified development programs; to serve as a rallying point for gathering, indexing, and focusing knowledge for the Appalachian region; to assist young people through youth development programs to realize their potential competency; and to accept a true University responsibility to further education in international affairs.

The program units of the Appalachian Center include the Office of Research and Development; the Cooperative Extension Service; University Extension and Continuing Education; Institute for Labor Studies; Mining and Industrial Extension, International Programs, Parkersburg Branch College, and the Kanawha Valley Graduate Center.

OFFICE OF RESEARCH AND DEVELOPMENT

The Office of Research and Development is responsible for the initiation and production of research which furnishes information useful toward improvement of the economy and life in West Virginia and the Appalachian Highlands. It has special responsibilities for the University in interdisciplinary applied research and applied research requested by communities and by departments of State government or which is jointly developed with them. It also serves as a source of current information in the fields of industrial, natural, and human resources. Current studies are

concerned with education requirements, forest product potentials, State and community development planning, travel and recreation services, development of computer-based economic and sociological data banks, highway protection and development, the legal and policy framework in the use of natural resources, and the growth points for economic development. The Office has recently organized the Water Research Institute which has been designated by the Governor for funding under the Water Resources Research Act of 1964.

COOPERATIVE EXTENSION SERVICE

The Cooperative Extension Service functions within the framework of the Appalachian Center and within the official agreement between the University and the United States Department of Agriculture, the eight approved project agreements between the Director of the Cooperative Extension Service and the Federal Extension Service, USDA, and the legal authority established by West Virginia. It assumes responsibility for Appalachian Center extension programs of informal education as related to youth development, agriculture production and marketing, consumer education, family-oriented projects, community improvement, resource development and conservation, public affairs, rural and urban county extension programs (through the area Appalachian centers), and coordination of specialist programming in field activities.

INSTITUTE FOR LABOR STUDIES

The Institute for Labor Studies, established in September, 1964, features a specialized program of labor education and studies within the University's organizational structure commensurate with its needs and importance. The Institute conducts off-campus educational programs for the worker and his union, related research, and musters the full facilities of the University to help meet the educational and informational needs of an ever-developing urban-industrial society. The University began a program in labor education in 1959.

UNIVERSITY EXTENSION AND CONTINUING EDUCATION

This program unit is responsible for extension courses of instruction for credit and non-credit, for Appalachian Center conferences, seminars, symposia, and certain specialized training courses.

The work given in extension courses corresponds in every particular to that given in the same courses on campus. Students taking extension courses for credit must satisfy all requirements for admission to the University and, before registering, must file with the Registrar of the University complete official transcripts of record.

The *maximum undergraduate credit* that may be counted toward any degree for extension work conducted by the University is 48 semester hours. The *maximum undergraduate credit* that may be counted toward a degree for extension work taken in other institutions is 30 semester hours. No more than 15 hours of work taken in *graduate extension courses* may be counted toward any degree, and of these only 8 semester hours may be in one field. Education majors are limited to 12 semester hours that may be counted toward the completion of the Master's Degree. No more than 8 of these hours can be taken in extension prior to earning 6 hours in Education *in residence* in the University. For other regulations on graduate extension for Education majors see the College of Education section of this bulletin and the 1965-66 Graduate School *Announcements.*

No University extension courses may be offered without the approval of the State Chairman of Continuing Education and Extended Credit Programs. Library and laboratory facilities for each course must be approved by the State Chairman and, in case of courses for graduate credit, by the Dean of the Graduate School. Reference books for the use of extension students may be borrowed from the University Library upon the order of the State Chairman of Continuing Education and Extended Credit Programs, subject to the approval of the Library committee. Postal charges must be paid by the individual or groups for whom the books are borrowed.

A fee of $12.00 per semester hour is charged for each extension course offered.

For further information write to the State Chairman of Continuing Education and Extended Credit Programs.

The University Extension and Continuing Education Division offers thirteen reading courses through correspondence. While these courses are offered in cooperation with the West Virginia Federation of Women's Clubs, any adult may enroll for any of these courses by applying to the State Chairman of Continuing Education and Extended Credit Programs. The fee is $1.00 per course. The reader sends in short reports on the books he reads in each course. When the course has been satisfactorily completed, a progress card from the West Virginia University Appalachian Center is awarded. These courses carry no University credit but are designed to provide adults with some of the best reading materials in the areas covered through this program. The courses include: (1) World Affairs; (2) Modern America; (3) Psychology for Everyday Living; (4) Happy Family Relationships; (5) Novel and Biography; (6) Ideas in Conflict; (7) The Home Beautiful; (8) Design for Outdoor Living; (9) Leadership; (10) So You've Been Elected; (11) Science and the Modern Man; (12) Something About Art, and (13) West Virginia.

MINING AND INDUSTRIAL EXTENSION

This program unit is responsible for leadership and development of an industrial extension education program; it will carry out technical education and special training, and promote safety, efficiency, and conservation of natural resources in the coal mining industry of West Virginia.

INTERNATIONAL PROGRAMS

This program unit is responsible for the cooperative programs with the U. S. Agency for International Development; for inter-nation education contracts and agreements; and for administering and developing the overseas commitments of West Virginia University as they occur. It also leads in developing a favorable climate for public concern with affairs of international importance.

PARKERSBURG BRANCH

This program unit is a fully integrated component of West Virginia University. Development and administration is done through the Appalachian Center. Its program, always to be kept on a par with West Virginia University's standards, is the responsibility of the academic leadership as designated by the President of the University. The Parkersburg Branch maintains close liaison with the Parkersburg College Fund, a non-profit corporation, which was established in 1961 to coordinate voluntary financial support of the branch. The members of the fund are local professional and business leaders.

KANAWHA VALLEY GRADUATE CENTER

The Kanawha Valley Graduate Center, established in 1958, serves as a West Virginia University graduate center and is fully integrated into the University structure. Its academic programs coincide with those in Morgantown. The academic program is under the direction of the Dean of the Graduate School and the University Committee on Graduate Centers. However, responsibility for developing and administering is with the Appalachian Center. The present graduate programs are in chemistry, chemical engineering, business administration, mechanical engineering, and civil engineering. Other programs are possible with proper support. The Kanawha Valley Graduate Center Committee, representative of the professional societies and dominant types of industry, keeps in close contact with the progress, problems, and needs of the Center. The committee assumes a major responsibility in assuring the necessary finances for operation of the Center.

The College of Arts and Sciences

ADMINISTRATIVE OFFICERS

Carl Maynard Frasure, Ph.D., *Dean of the College of Arts and Sciences* (1961), 1927.
Lloyd Raymond Gribble, Ph.D., *Associate Dean of the College of Arts and Sciences* (1961), 1929.

FACULTY

Biology

Earl Lemley Core, Ph.D., *Chairman and Professor of Botany* (1948), 1928.
Nelle Perrel Ammons, Ph.D., *Professor Emeritus of Botany* (1959), 1920.
Charles Henry Baer, Ph.D., *Assistant Professor of Biology* (1961), 1948.
Alice Elizabeth Barnett, M.S., *Instructor in Biology* (1960), 1959.
Elizabeth Ann Bartholomew, M.S., *Instructor in Biology and Curator of Herbarium* (1963), 1938.
Herald Durward Bennett, Ph.D., *Professor of Botany* (1961), 1948.
Arnold Benson, M.A., *Instructor in Biology* (1959).
Robert Lee Birch, M.S., *Instructor in Biology* (1948).
William Newman Bradshaw, Ph.D., *Assistant Professor of Biology* (1962).
Albert George Canaris, Ph.D., *Associate Professor of Zoology* (1962).
Roy Burdette Clarkson, Ph.D., *Assistant Professor of Biology* (1960), 1956.
Jesse Franklin Clovis, Ph.D., *Associate Professor of Biology* (1962), 1957
Thomas Eugene Conway, M.Sc.T., *Instructor* (part-time) *in Biology* (1964).
Mullen Ogle Coover, M.S., *Instructor in Biology* (1961), 1960.
Lloyd Raymond Gribble, Ph.D., *Professor of Zoology* (1947), 1929.
Roland Lee Guthrie, M.A., *Instructor in Biology and Arboretum Director* (1963), 1959.
Willis Hugh Hertig, Jr., Ph.D., *Assistant Professor of Biology* (1964), 1959.
Henry Winthrop Hurlbutt, Jr., Ph.D., *Assistant Professor of Biology* (1963).
Marion Louise Jones, B.E.Ed., *Instructor in Biology* (1963).
Barbara Lee Baugh Krames, Ph.D., *Assistant Professor of Biology* (1964).
Ethel Charlotte Montiegel, M.S., *Instructor in Zoology* (1956).
Charles Norman, Ph.D., *Professor of Biology,* (1961), 1953.
Robert Gray Nunley, M.A., *Instructor in Biology* (1963), 1961.
Albert Moore Reese, Ph.D., *Professor Emeritus of Zoology* (1946), 1907.
Robert Clifton Spangler, Ph.D., *Professor Emeritus of Botany* (1955), 1914.
Perry Daniel Strausbaugh, Ph.D., *Professor Emeritus of Botany* (1948), 1923.
Leland Hart Taylor, Sc.D., *Professor Emeritus of Zoology* (1963), 1922.
Leah Ann Williams, M.S., *Instructor in Biology* (1959).

Chemistry

Vincent John Traynelis, Ph.D., *Chairman and Professor of Chemistry* (1965).
George Louis Humphrey, Ph.D., *Associate Chairman and Professor of Chemistry* (1964), 1952.
Lillian Frances Alfred, M.S., *Instructor in Chemistry* (1961).
Armand Rene Collett, Ph.D., *Professor of Chemistry and Dean Emeritus of College of Arts and Sciences* (1963), 1924.
John A. Gibson, Jr., Ph.D., *Professor of Chemistry* (1952), 1926.
Jack Daniel Graybeal, Ph.D., *Associate Professor of Chemistry* (1962), 1957.
George Arthur Hall, Jr., Ph.D., *Associate Professor of Chemistry* (1956), 1950.
James Lester Hall, Ph.D., *Professor of Chemistry* (1955), 1946.
James Blake Hickman, Ph.D., *Professor of Chemistry* (1962), 1946.
James Ralph Hoyland, Ph.D., *Assistant Professor of Chemistry* (1964).
Owen Lloyd Jones, M.S., *Instructor in Chemistry* (1960).
Thomas William Lapp, Ph.D., *Assistant Professor of Chemistry* (1964).
Charles Lester Lazzell, Ph.D., *Professor of Chemistry* (1946), 1922.

Denis W. H. MacDowell, Ph.D., *Assistant Professor of Chemistry* (1959).
Charles Gordon McCarty, Ph.D., *Assistant Professor of Chemistry* (1964).
Bailie Jack McCormick, Ph.D., *Assistant Professor of Chemistry* (1964).
Chester William Muth, Ph.D., *Professor of Chemistry* (1963), 1949.
Armine Deane Paul, Ph.D., *Associate Professor of Chemistry* (1961), 1955.
Peter Popovich, Ph.D., *Associate Professor of Chemistry* (1960), 1946.
Neal Wayne Rohr, B.S.Ch.E., *Instructor* (part-time) *in Chemistry* (1964), 1963.
John Henry Strohl, Ph.D., *Assistant Professor of Chemistry* (1964).
Anthony Winston, Ph.D., *Assistant Professor of Chemistry* (1959).
David Francis Wolfe, M.S., *Instructor* (part-time) *in Chemistry* (1963).

Economics

Thomas C. Campbell, Jr., Ph.D., *Dean of College of Commerce and Professor of Economics* (1964), 1948.
Vance Quentin Alvis, Ph.D., *Professor of Economics* (1960), 1956.
Virginia Ham Cross, M.B.A., *Lecturer* (part-time) *in Economics* (1963).
Andrew Jackson Dadisman, Ph.D., *Professor Emeritus of Economics* (1951), 1914.
Betty Fishman, M.A., *Lecturer in Economics* (1963), 1957.
Leo Fishman, Ph.D., *Professor of Economics and Finance* (1952), 1947.
Thomas William Gavett, Ph.D., *Associate Professor of Economics* (1961), 1957.
Sandra Russell Henderson, M.A., *Instructor in Economics* (1964).
Dennis Roger Leyden, B.S., *Assistant Professor of Economics* (1962).
William Hayward McMillion, M.S., *Lecturer* (part-time) *in Economics* (1964).
Michael Mischaikow, Ph.D., *Assistant Professor of Economics* (1960).
Joseph Newhouse, M.A., *Assistant Professor of Economics* (1956), 1955.
Evan Owen Roberts, Ph.D., *Professor of Economics and Marketing* (1953), 1939.
Arlene Greeman Silvers, M.S., *Lecturer* (part-time) *in Economics* (1964).
Richard H. Slavin, Ph.D., *Associate Professor of Economics* (1964).
Anthony H. Stocks, Ph.D., *Assistant Professor of Economics* (1961).
James Howard Thompson, Ph.D., *Professor of Economics* (1958), 1948.
Carl Vindall Trosch, M.B.A., *Lecturer* (part-time) *in Economics* (1963).

English

James Paul Brawner, Ph.D., *Chairman and Professor of English* (1956), 1935.
Mary Rogers Ashburn, M.A., *Instructor in English* (1959).
William Kimbell Bennett, M.A., *Instructor in English* (1964).
Joy Underwood Berkley, M.A., *Instructor in English* (1962), 1960.
Carter Richard Bishop, Ph.D., *Professor of English* (1952), 1929.
Sallie Shrewsbury Board, M.A., *Instructor in English* (retired), (1964), 1945.
Evelyn Lazenby Bonar, M.A., *Instructor in English* (1958).
Hubert Barclay Bondurant, M.A., *Instructor in English* (1962).
Arthur Charles Buck, M.A., *Instructor* (part-time) *in English* (1964).
Mary Catherine Buswell, M.A., *Assistant Professor of English* (1960), 1947.
Daphne B. Chin Quee, M.A., *Instructor in English* (1964).
Stephen Fuller Crocker, M.A., *Professor Emeritus of English* (1963), 1931.
Lloyd Moore Davis, M.A., *Instructor in English* (1959).
Oreta Holbert Dawson, M.A., *Instructor in English* (1947), 1946.
David William Dowdell, M.A., *Instructor in English* (1947), 1946.
John William Draper, Ph.D., *Professor Emeritus of English* (1964), 1929.
Nicholas George Ehle, Jr., M.A., *Instructor in English* (1963).
Ruel Elton Foster, Ph.D., *Professor of English* (1957), 1941.
William Wirt French, M.A., *Instructor in English* (1964).
Jack William Futrell, M.A., *Instructor in English* (1955).
Patrick Ward Gainer, Ph.D., *Professor of English* (1957), 1946.
John Lewis Hicks, Jr., M.A., *Associate Professor of English* (1964), 1949.
Margaret Price Hoke, A.M., *Instructor in English* (retired), (1963), 1955.
Martha Cummins Howard, A.M., *Instructor in English* (1960).
Doris John Huzzey, M.A., *Instructor in English* (1963).
Betty Jo Hypes, M.A., *Instructor in English* (1960).
John Hubert Johnston, Ph.D., *Associate Professor of English* (1964), 1957.
Beatrice Brenneman Law, M.A., *Instructor in English* (1949), 1948.

Sandra Sturm Leckie, M.A., *Instructor in English* (1963).
Nell Lanham Leonian, M.A., *Instructor in English* (retired), (1963), 1947.
James Harry McCormick, M.A., *Instructor in English* (1964).
John Sherwood McDuffie, M.A., *Instructor in English* (1964).
James Thomas McVey, M.A., *Instructor in English* (1964).
Iris Joan Mankins, M.A., *Instructor in English* (1963).
Lynn Carl Martin, M.A., *Instructor in English* (1964).
John Mason Mings, M.A., *Instructor in English* (1964).
Mary Nadine Page, M.A., *Assistant Professor of English* (1946), 1925.
Helen Purinton Pettigrew, Ph.D., *Associate Professor Emeritus of English* (1964), 1919.
Gordon Marshall Pitts, Ph.D., *Associate Professor of English* (1964), 1960.
John Racin, Jr., Ph.D., *Assistant Professor of English* (1964).
Elizabeth Frost Reed, M.A., *Assistant Professor Emeritus of English* (1954), 1919.
Kathleen Guerrieri Rousseau, M.A., *Instructor in English* (1960).
Aileen Kuhn Shafer, M.A., *Instructor* (part-time) *in English* (1964).
Fred Manning Smith, Ph.D., *Professor Emeritus of English* (1951), 1927.
Elizabeth Carroll Spindler, M.A., *Instructor in English* (1961).
John Francis Stasny, M.A., *Instructor in English* (1955).
Mary Suzanne Thrasher, M.A., *Instructor in English* (1963).
Celia Jeanette Tower, M.A., *Instructor in English* (1957).
Lela Faye Vice, M.A., *Instructor in English* (1964).
Jerome Harold Zwickel, M.A., *Instructor in English* (1963).

Foreign Languages

Robert Sven Stilwell, Ph.D., *Chairman of Foreign Languages and Professor of German* (1963), 1947.
Michael Joseph Beauchemin, M.A., *Instructor in French* (1956).
William Franklin Boggess, Ph.D., *Assistant Professor of Ancient and Classical Languages* (1963).
M. William Buechele, M.A., *Instructor in German* (1964).
Odilie Alicia Vives Cantillano, M.A., *Instructor in Spanish* (1959).
Rafael Rivera del Valle, Ph.D., *Associate Professor of Latin American Studies* (1963).
Frederick William Franck, M.A., *Instructor in Italian and Spanish* (1960).
Emile George Frere, Ph.D., *Associate Professor of French* (1961), 1947.
Eleanor R. Gibbard, M.A., *Instructor* (part-time) *in French* (1964).
Francisco Herrera, M.A., *Associate Professor of Spanish* (1960), 1946.
Donald Thedron Huffman, M.A., *Instructor in German* (1956).
Victor Jacob Lemke, Ph.D., *Professor of German* (1955), 1939.
Arthur Cook McBride, Docteur de l'Universite de Bordeaux, *Professor of French* (1960), 1926.
Warren Francis Manning, Ph.D., *Professor of Romance Languages* (1952), 1932.
Bohdan Plaskacz, Ph.D., *Professor of Slavic Languages* (1963).
John Pushkarsh, Jr., A.M., *Instructor in Russian* (1955).
Armand Edwards Singer, Ph.D., *Professor of Romance Languages* (1960), 1940.
Claude Carl Spiker, Ph.D., *Professor Emeritus of Romance Languages* (1954), 1913.
Harley Ustus Taylor, Jr., Ph.D., *Assistant Professor of German* (1963), 1949.
Rebecca Estra Wade, M.A., *Assistant Professor of French* (1955), 1945.
Herbert J. Wilner, D.H.L., *Instructor* (part-time) *in Hebrew* (1962).

Geology and Geography

Dana Wells, Ph.D., *Chairman and Professor of Geology* (1961), 1930.
Arthur Edgar Burford, Ph.D., *Associate Professor of Geology* (1963), 1960.
Robert Guy Corbett, Ph.D., *Assistant Professor of Geology* (1962).
Chester Lee Dodson, M.A., *Assistant Professor* (part-time) *of Geology* (1963).
Alan Chase Donaldson, Ph.D., *Associate Professor of Geology* (1962), 1957.
Jan Allan Dyckes, M.S., *Instructor in Geology* (1964).
Harry Marion Fridley, Ph.D., *Professor Emeritus of Geology* (1964), 1928.

William Harry Gillespie, M.S., *Instructor* (part-time) *in Geology* (1958), 1957.
Milton Tidd Heald, Ph.D., *Professor of Geology* (1960), 1948.
Richard Stark Little, Ph.D., *Assistant Professor of Geography* (1962).
John Charles Ludlum, Ph.D., *Professor of Geology* (1956), 1946.
Paul Holland Price, Ph.D., *Professor of Geology* (1960).

History

William Thomas Doherty, Jr., Ph.D., *Chairman and Professor of History* (1963).
Wesley Marvin Bagby, Ph.D., *Associate Professor of History* (1962), 1956.
William Derrick Barns, Ph.D., *Associate Professor of History* (1954), 1940.
Elizabeth Chalfant MacNeil Boggess, M.A., *Lecturer* (part-time) *in History* (1964).
John Anthony Caruso, Ph.D., *Professor of History* (1962), 1950.
Oliver Perry Chitwood, Ph.D., *Professor Emeritus of History* (1946), 1907.
Elizabeth Cometti, Ph.D., *Professor of History* (1964).
Ray Ellsworth Cubberly, M.A., *Assistant Professor of History* (1963).
Jason Clark Easton, Ph.D., *Professor Emeritus of History* (1963), 1938.
Thomas Edson Ennis, Ph.D., *Professor of History* (1946), 1930.
John Ford Golay, D.Phil.(Oxon.), *Professor of History* (1961).
James William Hess, Ph.D., *Assistant Professor* (part-time) *of History* (1964).
Ruth M. Hicks, M.A., *Lecturer* (part-time) *in History* (1964).
Elizabeth Kesselring Hudson, Ph.D., *Lecturer in History* (1964).
Mortimer Levine, Ph.D., *Associate Professor of History* (1961), 1955.
Kurt Rosenbaum, Ph.D., *Assistant Professor of History* (1962).
Wilson Porter Shortridge, Ph.D., *Professor Emeritus of History* (1951), 1926.
Sara Rector Smith, Ph.D., *Associate Professor Emeritus of History* (1961), 1947.
Edward Marvin Steel, Jr., Ph.D., *Associate Professor of History* (1961), 1956.
Festus Paul Summers, Ph.D., *Professor of History* (1946), 1932.

Library Science

Robert Ferguson Munn, Ph.D., *Chairman and Professor of Library Science* (1962), 1952.
Evelyn Maude Kocher, M.S.L.S., *Lecturer* (part-time) *in Library Science* (1964).
Olive Densmore Lewis, B.S., *Assistant Professor of Library Science* (1962).
Charles Darold Patterson, M.A., *Assistant Professor of Library Science* (1962).
Florence K. Reese, M.A., *Professor of Library Science* (retired), (1964), 1935.

Mathematics

Joseph Kyle Stewart, Ph.D., *Chairman and Professor of Mathematics* (1952), 1930.
Lorna Doone Carlin, M.S., *Instructor in Mathematics* (1955).
Richard Edward Cerullo, M.S., *Instructor in Mathematics* (1964).
Charles Nelson Cochran, M.S., *Assistant Professor of Mathematics* (1957), 1951.
Jean McQuiston Coover, A.M., *Instructor in Mathematics* (1956).
Allen Byron Cunningham, Ph.D., *Professor of Mathematics* (1960), 1946.
Hannibal Albert Davis, Ph.D., *Professor of Mathematics* (1947), 1921.
James Robert Dosier, M.A., *Instructor in Mathematics* (1959).
Joy Bromberg Easton, M.S., *Instructor in Mathematics* (1955).
Thomas Baird Feagans, Jr., M.A., *Instructor in Mathematics* (1964).
Bernard Gilbert, M.S., *Instructor in Mathematics* (1958).
Helen Louise Godfrey, M.S., *Instructor in Mathematics* (1961).
Henry Wadsworth Gould, M.A., *Assistant Professor of Mathematics* (1961), 1958.
Lois Vivaneen Heflin, M.S., *Instructor in Mathematics* (1956).
Dora S. Hennen, M.S., *Instructor in Mathematics* (1958).
Franz Xavier Hiergeist, Ph.D., *Assistant Professor of Mathematics* (1964).
John Wesley Hogan, M.S., *Instructor in Mathematics* (1962).
Wilma Jean Loudin, M.S., *Instructor in Mathematics* (1960).
Harry Byron McClung, M.S., *Instructor in Mathematics* (1962).
Betty Louise Miller, M.S., *Instructor in Mathematics* (1957).

Iland Dee Peters, M.S., *Associate Professor of Mathematics* (1957), 1941.
John Stephen Skocik, Jr., M.S., *Instructor in Mathematics* (1962), 1960.
Charles Henry Vehse, Ph.D., *Professor of Mathematics* (1947), 1929.
Marvin Lewis Vest, Ph.D., *Professor of Mathematics* (1955), 1931.
Ronson Joseph Warne, Ph.D., *Professor of Mathematics* (1964).

Philosophy

Joseph Frederick Lambert, Ph.D., *Chairman and Professor of Philosophy* (1963).
John Reginald Cresswell, Ph.D., *Professor of Philosophy* (1949), 1929.
Robert Dean Jewell, M.A., *Assistant Professor of Philosophy* (1964).
William Sherman Minor, A.B., D.B., *Associate Professor of Philosophy* (1946).
Alan Martin Phillips, M.A., *Instructor in Philosophy* (1964).

Physics

Charles Danser Thomas, Ph.D., *Chairman and Professor of Physics* (1947), 1931.
Atam Parkash Arya, Ph.D., *Assistant Professor of Physics* (1964).
Albert Gerald Barnett, M.S., *Instructor* (part-time) *in Physics* (1964).
Paul Roger Errington, M.S., *Instructor* (part-time) *in Physics* (1962).
Stanley Farr, M.S., *Instructor in Physics* (1947).
Orfa Rex Ford, Ph.D., *Professor Emeritus of Physics* (1963), 1925.
Aubrey Clyde Hudgins, Jr., Ph.D., *Instructor* (part-time) *in Physics* (1964).
Oleg Jefimenko, Ph.D., *Associate Professor of Physics* (1960), 1956.
Arnold David Levine, Ph.D., *Assistant Professor of Physics* (1962).
Fred A. Molby, Ph.D., *Professor Emeritus of Physics* (1948), 1920.
Arthur Stephen Pavlovic, Ph.D., *Associate Professor of Physics* (1962), 1959.
Harvey Nixon Rexroad, Ph.D., *Professor of Physics* (1962), 1947.
William Everett Vehse, Ph.D., *Assistant Professor of Physics* (1961).
George Machir Williams, M.S., *Instructor* (part-time) *in Physics* (1964).
Douglas Bleeker Williamson, De.D., *Associate Professor of Physics* (1960), 1946.

Political Science

John Rodney Williams, Ph.D., *Chairman and Professor of Political Science* (1961), 1949.
Thomas Mitchell Drake, M.A., *Assistant Professor of Political Science* (1962).
Carl Maynard Frasure, Ph.D., *Professor of Political Science* (1940), 1927.
Robert Carlton Gibson, Ph.D., *Assistant Professor of Political Science* (1961).
Royal Clarence Gilkey, Ph.D., *Associate Professor of Political Science* (1963), 1957.
Donald Edward Hayhurst, Ph.D., *Associate Professor of Political Science* (1959), 1956.
George Wesley Rice, Ph.D., *Assistant Professor of Political Science* (1960).
William Robert Ross, M.A., *Associate Professor of Political Science* (1963), 1938.
Irvin Stewart, Ph.D., *Professor of Political Science* (1952), 1946.
Ralph Milton White, M.A., LL.B., *Assistant Professor of Political Science* (1951), 1940.

Psychology

Quin Fischer Curtis, Ph.D., *Chairman and Professor of Psychology* (1949), 1941.
Kent Graybeal Bailey, M.S., *Instructor* (part-time) *in Psychology* (1964).
James Franklin Carruth, Ph.D., *Associate Professor of Psychology* (1957), 1953.
Philip Edmund Comer, M.S., *Psychometrist for Psychology* (1964), 1961.
Orrin Hartshorn Cross, Ph.D., *Associate Professor of Psychology* (1957), 1951.
Robert Lee Decker, Ph.D., *Associate Professor of Psychology* (1962), 1955.
Samuel William Goots, M.A., *Instructor* (part-time) *in Psychology* (1964).
Ruth Brill Gross, M.A., *Counselor of Psychology* (1964).
August Wilbur Johnson, Jr., M.A., *Instructor* (part-time) *in Psychology* (1964), 1962.
Lester Lynn Ourth, Ph.D., *Assistant Professor of Psychology* (1962).

Eugene Anthony Quarrick, Ph.D., *Assistant Professor of Psychology* (1962).
Robert Edward Rankin, Ph.D., *Associate Professor of Psychology* (1961), 1954.
Klaus Warner Schaie, Ph.D., *Associate Professor of Psychology* (1964).
James Nicholas Shafer, Ph.D., *Associate Professor of Psychology* (1959), 1953.
Irvin Claude Southerly, M.A., *Instructor* (part-time) *in Psychology* (1964).
Elizabeth Mattingly Stalnaker, Ph.D., *Professor Emeritus of Psychology* (1953), 1925.
Arthur Raymond Thomas, Jr., Ph.D., *Associate Professor of Psychology* (1962), 1956.
Clarence Edward Willis, M.A., *Instructor in Psychology* (1963).

Religion

Manfred O. Meitzen, Ph.D., *Associate Professor of Religion* (1965).

Sociology

Harold Allan Gibbard, Ph.D., *Chairman and Professor of Sociology* (1948).
Bruce M. John, M.S., *State Extension Rural Sociology Specialist, Cooperative Extension Service* (1963).
Harold Neely Kerr, Ph.D., *Associate Professor of Sociology* (1959), 1946.
Edward V. McMichael, Ph.D., *Assistant Professor* (part-time) *of Sociology* (1964).
Paul Ausborn Miller, Ph.D., *Professor of Sociology* (1962), 1939.
Patricia Cook Rice, M.A., *Instructor* (part-time) *in Sociology* (1961).
Fred B. Silberstein, Ph.D., *Assistant Professor of Sociology* (1958), 1955.
Leonard Marion Sizer, Ph.D., *Associate Professor of Sociology* (1964), 1955.
Neil Jack Weller, Ph.D., *Assistant Professor of Sociology* (1958).
John Stanley Zawacki, Ph.D., *Assistant Professor of Sociology* (1963), 1961.

Speech

Lloyd Washington Welden, Sr., M.A., *Acting Chairman and Professor of Speech* (1964), 1947.
William Lee Barnett, M.A., *Instructor in Speech* (1962), 1961.
Beverly Claire Cortes, M.A., *Instructor in Speech* (1961).
Leonard McCutchan Davis, Ph.D., *Associate Professor of Speech* (1963), 1954.
Marja Steadman Fear, M.A., *Associate Professor Emeritus of Speech* (1953), 1920.
Betty Snyder Hall, M.A., *Instructor in Speech* (1962).
James Harold Henning, Ph.D., *Professor of Speech* (1945).
James Myers Mullendore, Ph.D., *Professor of Speech* (1963).
Edwin Richard Page, M.A., *Assistant Professor of Speech* (1964).
Walter Harrison Rockenstein, S.T.M., *Instructor in Speech* (1956).
Barbara Ann Seyler Thomas, M.A., *Instructor in Speech* (1961).
Harrison Waldo Wasson, Ph.D., *Professor of Speech* (1962).

Bureau for Government Research

Claude Jefferson Davis, Ph.D., *Director* (1961), 1957.
Eugene Randall Elkins, A.B., *Senior Research Analyst* (1961), 1952.
Harold Edward Neely, LL.B., *Senior Research Analyst* (1964).
Billy Colvin Ross, *Research Analyst* (part-time) (1964).

The Bureau for Government Research is concerned with studying and reporting problems of state and local government.

STANDING COMMITTEES

Executive: Messrs. Singer (1964), C. D. Thomas (1965), Wells (1966).
Instructional Policies and Practices: Messrs. Gribble (*Chairman*), Barns, Brawner, Gibbard, Heald, Henning, Humphrey, Vest, and J. R. Williams.
Scholarship: Messrs. O. H. Cross (*Chairman*), R. B. Clarkson, Cunningham, Gilkey, G. A. Hall, McBride, Silberstein, and Williamson.

General Information

ORGANIZATION AND PURPOSE

The College of Arts and Sciences includes a lower division which consists of work of the first and second years, and an upper division, which consists of work of the third and four years.

Instruction in the College of Arts and Sciences is administered through the following departments and interdepartmental areas:

Biology
Chemistry
Economics
English Language and Literature
Foreign Languages
Geology and Geography
History
Home Economics
Humanities
Library Science
Mathematics and Astronomy
Philosophy
Physical Science
Physics
Political Science
Psychology
Religion
Social Science
Sociology
Speech

MAIN OBJECTIVES

The curriculum of the College of Arts and Sciences has these main objectives:

1. *General Culture.* Work of the lower division is intended to complete what is usually termed "a general education." It rounds out the program of studies pursued in high school and promotes full development of the student as an individual and as a member of society. Ideally, the student should undergo a well-proportioned development intellectually, spiritually, physically, and emotionally. The end of such development should be an inner balance or stability on the basis of which further growth can take place. Development of the individual as a member of society is to be measured in terms of his or her usefulness and sense of responsibility to the social order. The student should develop the capacity of intellectual participation as a citizen in the community, state, country, and world. A general education should, therefore, provide for all students a meaningful experience appropriate to the individual and social needs which all citizens have in common as members of a free society in the contemporary world.

2. *Specific Attributes*: Most of the attributes of a general education can be placed in one of three categories: attitudes, areas of knowledge, and skills.

The following attitudes should be attained as a result of a general education:

(1) An attitude of tolerance or open-mindedness, characterized by a cosmopolitan outlook that will enable the student to see beyond the limits of his own profession, his own economic status, and his own country;
(2) An attitude of truth-seeking characterized by scientific objectivity and motivated by intellectual curiosity;
(3) An attitude of intelligent appreciation towards nature and the arts that will, as far as the student's own endowments will permit, help him in his esthetic and ethical choices; and
(4) An attitude of dispassionate self-appraisal, based on an understanding of his own nature and characterized by an awareness of his own mental strength and weakness.

The area of knowledge which should be common possession of all educated persons may be conveniently grouped into two divisions:

(1) A knowledge of man as a social and intellectual being, of his place in contemporary civilization, and of that civilization's place in the history of man.
(2) A knowledge of man as an organism and of man in his relation, direct or indirect, to the biological and physical environment in which he lives.

Three basic skills are regarded as indispensable to all educated persons:

(1) That of self-expression or communication, involving writing, speaking, reading, and listening.

(2) That of calculation, that is, a knowledge of, and some skills in, basic mathematics.
(3) A familiarity with at least one foreign language, not only as a useful skill, but also as a means of promoting tolerance and sympathetic understanding of peoples who do not speak our language.

BUILDINGS AND EQUIPMENT

The principal buildings used by the College of Arts and Sciences are the Physics, Chemistry, and Mineral Industries buildings, Woodburn, Science, Armstrong, Brooks, Reynolds, and Oglebay halls.

The central structure of the present Woodburn Hall was built in 1876, the north wing in 1900, and the south wing in 1910.

The Chemistry Building, a fireproof structure completed in 1926, houses the Department of Chemistry.

Armstrong Hall, a large four-story classroom building, was completed in the spring of 1950 and houses the Department of English and Department of Foreign Languages. Sociology, Social Work, and Library Science are housed in Engineering Building No. 1.

Brooks Hall, a modern five-story building, was put into service in the fall of 1950. It houses the Department of Biology and includes classrooms, laboratories, and excellent facilities for research work in the biological field.

The Physics Building was occupied in September, 1952. It is a six-story fireproof building, modern in every respect and equipped with machine shops, lecture rooms, and laboratories adapted to research in sound microwaves, atomic physics, and radioactivity. There is a special Radiation Laboratory on the second floor, open to all departments in the University interested in biophysics, biochemistry, agricultural chemistry, and medicine. This building also houses the Department of Mathematics.

COURSES RECOMMENDED

Two types of courses are recommended as common means for fostering the attributes of mind and character which a general education should develop in all students enrolled in the lower division of the College. They are:

1. *Courses for the promotion of basic skills*—calculation and communication.
2. *General introductory courses for the elementary but organically integrated study of four fields of human knowledge*—biological science, social science, physical science, and the humanities.

OPPORTUNITY FOR SPECIALIZATION

Work of the upper division is intended to provide intensive study in one or two fields of knowledge. It is based on the belief that an educated man or woman should not only know the fundamentals of several branches of study but should have a rather thorough knowledge of some selected field. In the upper division, therefore, the student concentrates on the major and one or two minors. The curriculum is sufficiently flexible, however, to meet the needs and tastes of individual students without at the same time exposing the student to the disadvantages of the free elective system.

THE MAJOR SUBJECT

In the upper division the student concentrates on a major selected from the following list of subjects:

Biology	History	Political Science
Botany	Home Economics	Psychology
Chemistry	Latin	Religion
Economics	Library Science	Sociology
English	Mathematics	Spanish
French	Philosophy	Speech
Geology	Physics	Zoology
German		

SCHOLASTIC STANDING, SCHEDULES, AND HONORS

Undergraduate Honors Program

Departments of the College of Arts and Sciences are permitted to establish undergraduate honors programs in conformity with the following provisions:

(a) *Admission to Honors.* Students admitted to honors will normally enter the honors program at the beginning of the second semester of the junior year.

(b) *Eligibility.* The principal qualification for admission to the honors program is ability to pursue independent academic work with vigor and imagination. A student will not qualify for admission to honors unless he has a cumulative grade-point average of at least 3.0 in all courses completed by the end of the fifth semester, and a grade-point average higher than 3.0 in the honor subject.

(c) *Program.* The heart of the honors curriculum is a coherent program of independent work, equal to a 3-hour course per semester, through the last three undergraduate semesters. Normally the honors work in the second semester of the junior year and first semester of the senior year will consist of independent reading or laboratory work, and the writing of reports. In his final undergraduate semester the student will prepare a thesis.

(d) *Examination.* Toward the end of the final undergraduate semester, the student must pass a comprehensive examination in the honors subject. The examination will ordinarily be written, though the Department may also require an oral examination.

Dean's List

The Dean of the College of Arts and Sciences will compile and release for publication through regularly prescribed University channels a list of those students who attained a grade-point average of 3.4 or higher on a total load of 14 or more credit hours at the end of each immediately preceding semester.

Classification of Students

To be classified as a freshman in the College of Arts and Sciences a student must have credit for at least 15 units of entrance requirements; to be classified as a sophomore he must have fulfilled all entrance requirements and have credit for 25 hours of college work; as a junior, 58 hours; as a senior, 92 hours.

Advisers

Lower Division. Each student in the lower division is assigned to an adviser who will assist in registration and who will have general supervision over the work of the student. Electives are chosen and changes in the program are made with the approval of the adviser. Students are urged to confer with advisers in respect to any difficulties or maladjustments in college life.

Upper Division. For transfer to the upper division a student must have completed a minimum of 58 hours and have maintained a grade-point average of 2.0 on all work for which he has received grades (except "W" and "WP").

Each student in the upper division is assigned to an adviser of the department to which the major subject belongs. The program of study and all changes in class assignments must be approved by the adviser.

Student Class Schedules

Each student will schedule his courses according to the curriculum he has chosen. A second-year student who has not completed all required courses listed in the first year of the curriculum that he is following will be required to schedule such courses before scheduling new courses. A student will not be registered for an upper-division course not provided in his lower-division curriculum unless he has satisfied all lower-division requirements or has scheduled the courses necessary to meet those requirements.

Withdrawal from scheduled classes will be permitted in an order reversed in priority from that stated in the preceding paragraph.

Maximum and Minimum Work

The maximum number of hours per semester for which a student may register is 19, the minimum is 14. A student in the upper-division may, however, with the approval of his adviser, register for a maximum of 20 hours per semester provided that during the semester immediately preceding his registration he has attained an average of 3.0 and that the load was not less than 14 hours.

Minimum Scholastic Standards

Normal progress toward upper-division status and graduation requires maintenance of a grade-point average of 2.0.

A student who receives a grade of "D" in any course during the terms or semesters in which he attempts his first 25 hours may repeat the course once during the next academic year in which he is enrolled. The second grade shall supersede the first if it is not lower than "D".

Probation and Suspension

Any student whose mid-semester grades are below passing in courses amounting to more than half of the total number of semester hours for which he is registered shall be placed on probation for the remainder of the semester. The terms of probation are determined by the scholarship committee.

Any student whose grades at the end of any registration period are below passing in courses amounting to more than half of the total number of semester hours for which he is registered shall be suspended from the University. A freshman subject to the operation of this rule at the end of his first registration period in residence shall be placed on probation for the succeeding registration period.

When any student falls 10 grade points or more below a 2.0 average, or when a lower-division student, after earning 58 semester hours, is ineligible to enter the upper-division because his total grade-point average is less than 2.0, he shall be placed on probation and allowed a maximum of two semesters to reach a 2.0 average. If, while on probation, the student fails to show a reduction in his grade-point deficiency at the end of any semester or term, or if he fails to achieve a 2.0 average by the end of the school semester of his probationary period, he shall be suspended.

All actions of the Committee on Scholarship and the Dean that affect the standing of a student shall be reported by the Dean to the Registrar.

Attendance

1. Students shall attend all classes, including laboratory sessions, for which they have enrolled, unless prevented from doing so by illness, injury, authorized University activities, or other reasons approved by the Dean.

2. A student enrolled in a course numbered under 100 shall be reported by the instructor to his adviser and his dean on an appropriate form as soon as his absences exceed the number of class meetings in a normal week.

3. A student whose absences in a course numbered under 100 exceed the number of class meetings in three normal weeks:

(a) shall again be reported to his adviser and to his dean; and

(b) may be barred from the final examination in the course by the instructor, except that the student is permitted to appeal the instructor's decision to the Dean of the College of Arts and Sciences, whose ruling shall be final.

4. Any student in an upper-division course shall be reported to his adviser and his dean as soon as his absences jeopardize his class standing.

5. The instructor may bar a student in an upper-division course from the final examination for excessive absences if:

(a) the student has been reported to his adviser and to his dean for excessive absences, and

(b) after being reported for excessive absences, his subsequent absences exceed the number of class meetings in a normal week, and

(c) the total number of absences exceeds the number of class periods in the course during three full weeks.

The student may appeal the instructor's decision to the Dean of the College of Arts and Sciences, whose decision shall be final.

6. A student who fails to attend a class meeting of a course after twice being reported for absences from it shall again be reported, and thereupon may be suspended from the University by the Dean of the College of Arts and Sciences.

7. Attendance rules shall apply equally, and separately, to lectures, quiz sections, discussion groups, and laboratory sessions.

8. A student who must be absent from class for an extended period of time shall inform his adviser or his dean.

DUTIES OF ADVISERS

All advisers, upon receipt of reports of excessive absences, shall have conferences with the student concerned and shall make such recommendations and adjustments as are desirable and feasible. If the adviser does not find a satisfactory solution after a conference with the student, he shall report the case to the Dean.

Requirements for the Degree

CREDIT DEFINED

The "semester hour" is the standard for computing the amount of work required for graduation in the curricula leading to the degrees. The "hour" represents the amount of work done in one semester (approximately 18 weeks) in one recitation hour with two preparation hours per week.

BACHELOR OF ARTS DEGREE

The Bachelor of Arts Degree in the College of Arts and Sciences is conferred upon a student who complies with the general regulations of the University concerning degrees, satisfies all entrance, college, and departmental requirements.

BACHELOR OF SCIENCE DEGREE

The Bachelor of Science Degree is conferred upon a student who complies with the general regulations of the University concerning degrees, satisfies all entrance and college requirements, and completes the requirements of one of the fields listed below.

The minimum credit requirement varies with the several departments offering programs leading to the Bachelor of Science Degree. The minimum requirement shall be no less than 128 hours in any area.

For all details of the course of study leading to the Bachelor of Science Degree, refer to the pages listed.

1. Chemistry (see page 144)
2. Geology (see page 166)
3. Physics (see page 186)
4. Speech Correction (see page 200)

A SECOND BACHELOR'S DEGREE

A student who has received a Bachelor's Degree in one department or college of West Virginia University may become eligible for a second Bachelor's Degree by earning an additional 30 semester hours in residence in the College of Arts and Sciences and meeting all requirements, departmental and otherwise, of the second Bachelor's Degree.

GENERAL REQUIREMENTS FOR ALL DEGREES

In order to qualify for a baccalaureate degree in the College of Arts and Sciences, a student must present a minimum of 128 hours of credit, including 124 hours exclusive of credits in required Physical Education, required Military Science

or Air Science, English 0, Mathematics 2, and Foreign Languages 1 and 2 if the student has earned two or more units in the same language in high school or other preparatory school.

Courses are classified as lower-division courses (numbers below 100), and upper-division courses (100-299). The student should complete basic course requirements during his first two years.

When the student has established a minimum of 58 hours of credit with a grade-point average of 2.0 or better, he may enter the upper division. He must present no less than 58 hours of credit in upper-division work in order to qualify for graduation.

Basic Requirements

	Hr.
I. *Military Science or Air Science* (for men)[1]	8
Physical Education[2]	
For men	2
For women	4
II. *Foreign Language*	12

Two years of study in one language. A student who presents two units of high school or other preparatory school credit in a language may elect to take University courses numbered 1 and 2 in that language, but no credit will be allowed. He may satisfy the language requirement, however, by completing courses 3 and 4 or other foreign language courses that may be approved by his departmental adviser. Fewer than 6 hours in courses numbered 1 and 2 will not be counted toward any degree.

	Hr.
III. *English Composition* (English 1 and 2)	6

A student who is assigned to English 0 as a result of preliminary tests will be admitted to English 1 only after the successful completion of English 0.

IV. *Distribution Requirements*: The subject groups A, B, C listed below define the Core Curriculum requirements for all undergraduate students in the University. Lists of courses that satisfy the requirements of each of the groups are provided by the University committee on the core curriculum. These lists are the student's guide in the development of his course program. The group requirements may be satisfied by courses in either the lower division or the upper division.

The student is required to complete courses in at least two of the subjects listed in each of the three groups.

Group A: Art, Music, Ancient or Modern Foreign Languages and Literature (beyond credits submitted to meet requirement II, above), Literature of the English Language, Philosophy, Humanities (General Course) 12 hr.

Group B: Economics, Geography, History, Psychology, Political Science, Sociology, Social Science (General Course) 12 hr.

[1]Military science or air science instruction is required of all male students except those who at the time of matriculation are 23 years of age or have completed no less than 58 hours of work, and all who have credit for 2 hours of military science or air science or 1 unit of entrance credit in military academy. Students must register for military science or air science upon their entrance into the University and continue in the course until the full requirement has been met or until a regular exemption card is filed in the Office of the Registrar.

[2]Two hours of physical education general program for men, to be taken during the first year of residence, and four hours of physical education general program for women, to be taken during the first and second years in residence, are required for graduation of students presenting fewer than 58 semester hours, unless previous credit has been allowed.

Group C: Biology, Chemistry, Geology, Mathematics, Physics, Physical Science (General Course) ..... 12 hr.

In satisfying the requirements of Group C the student must have laboratory experience. The College strongly recommends a full year in one science.

V. *Upper-Division Departmental Requirements* in the major subject (18-24 hours), and in one or more minor subjects if required by the department.

A maximum of 42 hours in one departmental subject (as listed on p. 127) may be counted toward graduation. As much as 60 hours may be presented from a department that offers more than one subject (e.g. Foreign Languages).

In the application of this rule, any course that is required of all students of the College (e.g. Freshman English) may be excluded from the hours computed for the major subject.

VI. *Electives* as approved by the departmental adviser, to complete the minimum number of hours required for graduation.

NOTES:

Mathematics: The University requires proficiency "equal to that normally attained in two years of high-school mathematics." A student who on entrance fails to meet this standard will be required to take remedial work in mathematics.

English Proficiency: The student who takes his Freshman English at West Virginia University must achieve a grade of "C" in English 2 or pass the English Proficiency Examination. All transfer students must pass this examination in order to qualify for graduation.

Work Completed in Other Colleges of the University: In addition to work conducted by other faculties but recognized as a regular part of the elective program of the College of Arts and Sciences, and work offered toward fulfillment of the Core Curriculum, a student may establish credit not to exceed 24 hours in approved courses outside this college. The credit that may be transferred from any one college or school shall not exceed 6 hours of upper-division work in Military Science or Air Science; 21 hours in Education; and 15 hours in any other college or school. Under this provision, clinical and skill courses taken in other schools or colleges will not be accepted for credit in the College of Arts and Sciences.

Combined-Course Programss In completing work for the Bachelor of Arts degree, the student may pursue prescribed Pre-Medical or Pre-Dental courses, or a combined program in Arts and Medicine or Arts and Dentistry. See page 134.

Education, Teaching Fields, and Teacher Certification: A student who wishes to prepare for teacher certification may register during his first two years in the College of Arts and Sciences while completing the General Education requirements. At the beginning of the junior year, he may transfer either to the upper-division in the College of Arts and Sciences or to the College of Education. If he remains in the College of Arts and Sciences, he will satisfy the requirements in Education and in his chosen teaching fields while proceeding with the requirements of his major department and subject in Arts and Sciences.

PREMEDICAL AND PREDENTAL COURSES (128 Hours)*

The following sequence of courses is worked out for the guidance of students who are preparing for the study of Medicine, Dentistry, and the related professions. All of the required subjects are included. Leading medical and dental educators in the United States today are definitely in favor of a good general training rather than exclusive specialization in the so-called premedical sciences.

*A total of 128 semester hours of which 124 semester hours must be exclusive of credit in required Physical Education, required Military Science or Air Science and English 0. Math. 2, if completed after September 1, 1962, will not be included in the 124 hours. Credit earned in Foreign Languages 1 and 2 after September 1, 1963, will not be counted toward minimum degree requirements if the student has earned two or more units in the same language in high school or other preparatory school.

It is recommended that all premedical and predental students plan to complete the requirements for the Bachelor of Arts Degree. University Core Curriculum requirements must be satisfied in order to receive the degree.

FIRST YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
English 1	3	English 2	3
Chem. 1	4	Chem. 2	4
Zool. 1 or Biol. 1	4	Zool. 2 or Biol. 2	4
Math. 3	3	Math. 4	3
Phys. Ed.	1	Phys. Ed.	1
Mil. or Air Sci. 1 (M)	2	Elective (W)	3
Elective (W)	3	Mil. or Air Sci. 2 (M)	2
Maximum hours allowed	18	Maximum hours allowed	18

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Chem. 115 (or 105)	3-4	Chem. 115 or Psych. 1	3
Physics 1	4	Physics 2	4
Modern Foreign Language	3	Modern Foreign Language	3
Mil. or Air Sci. 3 (M)	2	Mil. or Air Sci. 4 (M)	2
Phys. Ed. (W)	1	Phys. Ed. (W)	1
Group B elective or other	3	Group B elective or other	3
Elective	3	Elective	3
	18		18

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Modern Foreign Language	3	Modern Foreign Language	3
Elective	3	Elective	3
American or English Literature	3	American or English Literature	3
Chem. 163 or 233	4	Chem. 238 or elective	4
Zool. 231 or elective	5	Zool. 232 or elective	5
	18		18

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Chem. 163 or 233 or elective	4	Chem. 238 or elective	4
Zool. 231 or elective	5	Zool. 232 or elective	5
Electives	8-9	Electives	8-9
	18		18

Many medical schools recommend that Chem. 233 and 238, and Zool. 231 and 232 be taken the year preceding entrance to medical school.

Candidates for the A.B. Degree in Premedicine or Predentistry must complete the following minimum number of credit hours in the subjects listed: English, 12 hr. (must include English 1 and 2 and 6 hr. of American or English literature); Foreign Language, 12 hr.; Mathematics, 6 hr. (must include Math. 3 and 4); Chemistry, 23 hr. (must include Chem. 1, 2, 115, 163, 233, 238, [105 also recommended]); Zoology, 18 hr. (must include Zool. 1 and 2 [Biol. 1 and 2 may be substituted], 231, 232); Physics, 8 hr.; Psychology, 3 hr.; Nonscience group, 30 hr. including specific courses listed above (to be selected from Art, English, Humanities, Economics, Sociology, History, Political Science, Philosophy, Psychology, Speech, Foreign Language, Education, Latin, Home Economics, Music, Library Science, Mathematics, Social Science.)* A minimum of 128 hours including 58 hours of upper-division courses is required for the degree.

*Additional hours to fulfill Core Curriculum requirements should be taken if necessary.

COMBINED COURSES

Special Requirements

The Combined Degree is one wherein the student serves his senior year at the medical or dental school of his choice, and after successful completion of it, then receives his A.B. degree. Prior approval of the Dean of the College of Arts and Sciences of West Virginia University must be had before enrollment in a professional school, in order to receive the Combined Degree. Candidates for a combined degree in Premedicine or Predentistry are required to meet the special provisions of either (a) or (b) below.

(a) A minimum of 96 hours of credit must be completed in the College of Arts and Sciences of West Virginia University of which 32 hours must be from the upper-division courses. An official certification of the professional work must be made by the Registrar of the professional school to the University Registrar.

(b) A minimum of 64 hours of credits must be completed in the College of Arts and Sciences of West Virginia University of which 32 hours must be from the upper-division courses. This option would apply only to students bringing transfer credits.

Arts and Medicine or Dentistry (128 Hours)

(*Recommended Curriculum for a Combined Course in Arts and Medicine or Dentistry*)

Students who enter a School of Medicine or a School of Dentistry after the completion of a minimum of 106 hours (men) or 100 hours (women), of which 32 hours must be from the upper-division courses, of the premedical and predental curriculum and who have satisfied all provisions of the College of Arts and Sciences regulations governing combined course programs, may receive the Bachelor of Arts Degree upon the successful completion of the first year of medicine or dentistry.

A student who is a candidate for the A.B. degree under the provisions of the curriculum must submit, at the time of his acceptance and prior to his registration in an accredited School of Medicine or Dentistry, a petition for the degree to his adviser who will forward it with his recommendations to the Dean. If the petition is approved, the candidate will be recommended for graduation upon receipt of certification from the professional school by the Registrar of the University, to the effect that he has successfully completed the first year of medicine or dentistry.

FIRST YEAR

Same courses as required in the Curriculum for A.B. degree in Premedicine or Predentistry.

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Chem. 115 or Psych. 1	3	Chem. 115 or Psych. 1	3
Physics 1	4	Physics 2	4
Modern Foreign Language	3	Modern Foreign Language	3
Mil. or Air Sci. 3 (M)	2	Mil. or Air Sci. 4 (M)	2
Phys. Ed. (W)	1	Phys. Ed. (W)	1
Hist. 1 or 52	3	Hist. 2 or 53	3
Art 115, Speech 11, or Pol. Sci. 1	3	Art 115, Speech 11, or Pol. Sci. 1	3
	18		18

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Modern Foreign Language	3	Modern Foreign Language	3
American or English Literature	3	American or English Literature	3
Chem. 163	4	Pol. Sci. (upper division)	3
Chem. 233	4	Chem. 238	4
Zool. 231	5	Zool. 232	5
	19		19

The following minimum number of credit hours must be completed in the courses listed: English, 12 hr. (must include English 1 and 2 and 6 hr. of American or English literature); Foreign Language, 12 hr.; Mathematics, 6 hr. (must include Math. 3 and 4); Chemistry, 23 hr. (must include Chem. 1, 2, 115, 163, 233, 238); Zoology, 18 hr. (must include Zool. 1 and 2 [Biol. 1 and 2 may be substituted], 231, 232); Physics, 8 hr.; Psychology, 3 hr.; Nonscience group, 15 hr.*

Students in the Combined Courses program are urged to attend at least one Summer Session.

*Additional hours to fulfill Core Curriculum requirements should be taken if necessary.

PRE-PROFESSIONAL COURSES

Not leading to degrees in the College of Arts and Sciences.

(A). Pre-Commerce Curriculum

Candidates for the degrees of Bachelor of Science in Business Administration and Bachelor of Science in Economics will register in the College of Arts and Sciences during their freshman and sophomore years. It is particularly important that Economics 51 and 52 be completed during the sophomore year since these courses are prerequisite for all upper-division courses in the College of Commerce. They will be transferred to the College of Commerce after completion of 58 semester hours of required and acceptable elective courses with a grade average of not less than "C".

Students must observe the University Core Curriculum Requirements as to distribution of elective courses. During the four years, in addition to the required courses listed herein, the student must complete 12 hours of Group A electives, 6 hours of Group B electives, and 9 hours of Group C electives from the list of approved elective courses.

The Pre-Commerce curriculum is as follows:

FRESHMAN YEAR		SOPHOMORE YEAR	
Courses	*Hr.*	*Courses*	*Hr.*
English 1 and 2—Composition	6	Acctg. 1 and 2—Principles	6
Math. 3—College Algebra	3	Econ. 51 and 52—Principles	6
Pol. Sci. 2—Amer. Fed. System	3	English 18—Advanced Composition	3
Psych. 1—Intro. to Psych.	3	Speech 11—Public Speaking	3
Sociol. 1.—Intro. to Sociol.	3	Mil. or Air Sci. 3 and 4*	4
Mil. or Air Sci. 1 and 2*	4	Phys. Ed.—Women's Program*	2
Phys. Ed.—General Program*	2	Electives	12
Electives	10		
	30-34		32-34

*A minimum of 124 hours of credit must be earned in subjects other than required Physical Education and required Military or Air Science.

Students who select a foreign language as an elective must complete 6 hours in the same language at the University. Credit toward graduation is not allowed for English 0 or Mathematics 2. For further information see the College of Commerce section of this bulletin.

(B). Pre-Education Curriculum

Candidates for the degree of Bachelor of Science in Secondary Education and Bachelor of Science in Elementary Education are registered in the College of Arts and Sciences until they have completed 58 hours or more of academic work in the lower division of the College, with a grade-point average of 2.0. They then transfer to the College of Education. During the Pre-Education period students are advised to complete as many as possible of the general courses required by the College of Education and for State certification.

In addition to the above general academic requirements, students preparing to teach in high school are advised to complete as many as possible of the required

academic courses in two teaching fields. Those preparing to teach in the elementary school will follow directions applicable to that field.

Upon the successful completion of the entire 64 hours of work in the lower division, Pre-Education students are eligible for the Junior Certificate of the College of Arts and Sciences.

Effective September, 1967, the following will be required for admission to the undergraduate programs in the College of Education:

1. A grade-point average of 2.25 on all work attempted.
2. A grade-point average of 2.25 on all work attempted for enrollment in the student teaching block.
3. For registration in professional education courses beyond Education 106, student must complete requirements for Education 100.

Teaching Certificates

The Dean of the College of Education is authorized by the Board of Governors to recommend all applicants for teaching certificates.

High-school teaching certificates may be obtained by students registered in the College of Arts and Sciences as well as in the College of Education, provided they meet the requirements for certification. To qualify for the elementary-school teaching certificate, the student will transfer to the College of Education at the beginning of the junior year.

Candidates for the A.B. degree who wish to qualify for teaching certificates should indicate this fact to their adviser and plan their entire course with this in view. Unless this is done by the end of the freshman year, students may encounter difficulties in qualifying for the certificate by the time they receive their degree.

As a check, students should consult each semester with Mary C. Buswell or Angelo Orlandi, advisers of Pre-Education candidates for high-school or elementary-school teaching certificates, in the Pre-Education Office.

(C). Pre-Journalism Curriculum

Candidates for the degree of Bachelor of Science in Journalism are registered in the College of Arts and Sciences until they have earned at least 58 semester hours of college credit. During the freshman and sophomore years they should consult the Pre-Journalism counselor and should complete all or most courses specified for Pre-Journalism majors. For information concerning Science or Agriculture Specialization and upper-division courses consult the School of Journalism section of this bulletin.

Before or soon after entering the University a student planning to become a journalism major should learn the touch system of typing.

FIRST YEAR				SECOND YEAR			
First Sem.	*Hr.*	*Second Sem.*	*Hr.*	*First Sem.*	*Hr.*	*Second Sem.*	*Hr.*
English 1	3	English 2	3	Journ. 18	3	Journ. 19	3
Hist. 1 or Humanities 1	3	Hist. 2 or Humanities 2	3	Hist. 52	3	Hist. 53	3
Natural Science	4	Natural Science	4	Foreign Language (if needed)*	3	Foreign Language (if needed)*	3
Foreign Language*	3	Foreign Language*	3	English 6	3	English 4 or 164	3
Journ. 1	2	Journ. 2	1	Econ. 51	3	Econ. 52	3
Phys. Ed.	1	Phys. Ed.	1	Mil. or Air Sci. 3	2	Mil. or Air Sci. 4	2
Mil. or Air Sci. 1	2	Mil. or Air Sci. 2	2	Phys. Ed (W)	1	Phys. Ed. (W)	1
Electives	0-1			Electives as needed	—	Electives as needed	—
Max. Hr.	18		18		18		18

*Optional for advertising majors, and journalism majors with agriculture, home economics or sciences specialization may substitute 12 credit hours of advanced work in their specialization.

(D). Curriculum in Pre-Medical Technology

The curriculum which follows is designed to satisfy the course requirements for admission to the specialized and technical portion of the curriculum in Medical Technology offered by the School of Medicine. The Core Curriculum requirements must be satisfied, and 64 hours total are required.

Students are not transferred automatically from the pre-professional course (first two years) to the professional course (third and fourth years). Application for admission to the third year should be made on forms obtainable from the Office of the Assistant Registrar, Medical Center; when completed, the forms are to be returned to his office. Preference is given to residents of West Virginia.

Application should be filed before February of the second year.

FIRST YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Chem. 1, Inorganic	4	Chem. 2, Inorganic	4
English 1, Comp. & Rhetoric	3	English 2, Comp. & Rhetoric	3
Elective*	3	Math. 3	3
Biol. or Zool. 1, General	4	Biol. or Zool. 2, General	4
Mil. or Air Sci. 1 (M)	2	Mil. or Air Sci. 2 (M)	2
Phys. Ed.	1	Phys. Ed.	1
Med. Tech. 1**	1	Med. Tech. 2**	1
Maximum Hrs. Allowed 18	16-18	Maximum Hrs. Allowed 18	16-18

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Chem. 131, Organic	4	Chem. 115, Quantitative	4
Elective*	3-9	Elective*	3-9
Physics 1, Introductory	4	Physics 2, Introductory	4
Mil. or Air Sci. 3 (M)	2	Mil. or Air Sci. 4 (M)	2
Phys. Ed. (W)	1	Phys. Ed. (W)	1
Med. Tech. 3**	1	Med. Tech.**	1
	16-19		16-19

*Electives: Students who plan to do graduate study should take foreign language as Elective. Other recommended Electives fall in the Core groups A and B. Math. 2, if required, should be taken here in the first year.

**Medical Technology 1, 2, 3, and 4 are not required subjects, but it is highly recommended that all students take these courses.

(E). Pre-Pharmacy Curriculum

The professional curriculum of the School of Pharmacy is based on two years of pre-pharmacy requirements. The pre-pharmacy requirements are as follows:

Algebra	3 hr.	Chemistry, Organic	8 hr.
Trigonometry	3 hr.	Physics	8 hr.
English Composition	6 hr.	Electives from	
Principles of Economics	6 hr.	Core Group A	12 hr.
Chemistry, General	8 hr.	Core Group B	6 hr.
Biology, General	8 hr.		
		Total	68 hr.

Students required to take Military or Air Science will be exempt from an equivalent number of hours of electives in Core Groups A and B. A "C" average is considered the minimum standard for admission.

For admission to the School of Pharmacy, formal application should be made to the Admissions Committee of the School as early as possible after February 1, but before August 1, preceding the fall term in which the student is seeking enrollment. Complete information may be obtained from the Dean of the School of Pharmacy or from the Office of the Assistant Registrar, Medical Center.

Courses of Instruction and Curricula

BIOLOGY

Laboratory Fees

A non-refundable fee is required of all students who take the following laboratory courses in Biology, Botany, and Zoology:

Course	*Per Semester*	*Course*	*Per Semester*
Biol. 1	$ 8.00	Bot. 262	$ 8.00
Biol. 2	8.00	Bot. 325	8.00
Biol. 51	4.00	Bot. 374	8.00
Biol. 211	12.00	Zool. 1	8.00
Biol. 215	8.00	Zool. 2	8.00
Biol. 221	8.00	Zool. 31	4.00
Biol. 281	8.00	Zool. 224	8.00
Biol. 282	8.00	Zool. 231	12.00
Bot. 1	8.00	Zool. 232	12.00
Bot. 2	8.00	Zool. 233	8.00
Bot. 61	4.00	Zool. 236	12.00
Bot. 67	4.00	Zool. 237	4.00
Bot. 68	4.00	Zool. 251	8.00
Bot. 161	8.00	Zool. 263	8.00
Bot. 171	5.00	Zool. 264	8.00
Bot. 204	8.00	Zool. 265	4.00
Bot. 221	8.00	Zool. 271	8.00
Bot. 231	8.00	Zool. 272	12.00
Bot. 232	8.00	Zool. 273	12.00
Bot. 235	8.00	Zool. 274	12.00
Bot. 250	8.00	Zool. 276	12.00
Bot. 256	8.00	Zool. 296	4.00
Bot. 261	8.00	Zool. 297	4.00

Students may select biology, botany, or zoology as their major subject. Biology 1 and 2 or Botany 1 and 2 will be required of students who wish to major in botany. Either Biology 1 and 2 or Zoology 1 and 2 will be required of students who elect to major in zoology. Majors in biology should take Biology 1 and 2.

Prospective majors in biology, botany, or zoology should include in their schedule of lower-division work Chemistry 1 and 2. Prospective majors in zoology should also include Chemistry 115 in the lower-division schedule.

Courses in botany and zoology (not to exceed 10 semester hours in each) may be counted toward a major in biology, provided that the student has a minimum of 6 semester hours in upper-division courses in biology.

Teacher Certification for Biology Majors

A student may meet the requirements for the A.B. degree with a major in Biology and at the same time qualify for teacher certification. The curriculum suggested is designed to include the requirements of the basic subjects prescribed for the first two years for prospective teachers. During the junior and senior years the courses required in the major and minor subjects will largely coincide with those required for first and second teaching fields for high school teachers. At the same time they will complete the required work in Education in the teacher-training program.

Suggested Curriculum for A.B. Degree With Major in Biology

FIRST YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
English 1	3	English 2	3
Math. 3	3	Math. 4	3
Biol. 1	4	Biol. 2	4
Foreign language	3	Foreign language	3
Phys. Ed. 1 (M)	1	Phys. Ed. 2 (M)	1
Phys. Ed. 3 (W)	1	Phys. Ed. 4-25 (W)	1
Mil. or Air Sci. 1	2	Mil. or Air Sci. 2	2
	Women—14 Men—16		Women—14 Men—16

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Chem. 1	4	Chem. 2	4
Social Sci. 1	4	Social Sci. 2	4
Foreign language	3	Foreign language	3
Educ. 105	3	Educ. 106	3
Educ. 100	1	Art 130	3
Music 10	2	Phys. Ed. 102 (W) 4-25	1
Phys. Ed. 101 (W) 4-35	1	Mil. or Air Sci. 4 (M)	2
Mil. or Air Sci. 3	2		
	Women—18 Men—19		Women—18 Men—19

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Physics 1	4	Physics 2	4
English 3, 4, 5, or 6	3	Hist. 2	3
Chem. 115	4	Bacteriol. 141	4
Hist. 1	3	Zool. 271	4
English 18	3	Health Ed. 102	2
Educ. 109	2		
	19		17

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Biol. 221	4	Educ. 124	6
Chem. 233	4	Educ. 150	2
Botany elective	4	Educ. 120	4
Zool. 251	4	Chem. 238	4
Biol. elective	3-5	Bot. 204	4
	18-20		20

Suggested Curriculum for A.B. Degree With Major in Botany

FIRST YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Bot. 1 or Biol. 1	4	Bot. 2 or Biol. 2	4
English 1	3	English 2	3
Foreign language	3	Foreign language	3
Math. 3	3	Math. 4	3
Phys. Ed.	1	Phys. Ed.	1
Mil. or Air Sci. 1	2	Mil. or Air Sci. 2	2
Elective	2	Elective	2
	16-18		16-18

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Foreign language	3	Foreign language	3
Mil. or Air Sci. 4	2	Mil. or Air Sci. 4	2
Phys. Ed. (W)	1	Phys. Ed. (W)	1
Physics 1	4	Physics 2	4
Chem. 1	4	Chem. 2	4
Group 1 elective	3-4	Group 1 elective	3-4
	16-18		16-18

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Group 2 elective (lower div.)	3	Group 2 elective	3
Group 4 elective (lower div.)	3	Chem. 115	3
Group 5 elective (upper div.)	3	Genetics 221	3
Botany (or elect.) (upper div.)	7-9	Botany (or elect.) (upper div.)	7-9
	16-18		16-18

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Chem. 233	4	Chem. 238	4
Botany (or elect.) (upper div.)	9-11	Botany (or elect.) (upper div.)	9-11
Group 3 elective	3	Group 3 elective	3
	16-18		16-18

Suggested Curriculum for A.B. Degree With Major in Zoology

FIRST YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Zool. 1 or Biol. 1	4	Zool. 2 or Biol. 2	4
English 1	3	English 2	3
Chem. 1	4	Chem. 2	4
Math. 3	3	Math. 4	3
Phys. Ed.	1	Phys. Ed.	1
Mil. or Air Sci. 1	2	Mil. or Air Sci. 2	2
	17		17

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Art 115	3	Chem. 115	3
Physics 1	4	Physics 2	4
Foreign language	3	Foreign language	3
Mil. or Air Sci. 3	2	Mil. or Air Sci. 4	2
Phys. Ed. (W)	1	Phys. Ed. (W)	1
Group 1 elect.	3-4	Group 1 elect.	3-4
Electives	2-4	Electives	2-4
	18		18

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Group 2 elective	3	Group 2 elective	3
Chem. 233	4	Foreign language	3
Foreign language	3	Botany	4
Botany	4	Chem. 238	4
Zool. 251	4	Electives (upper division)	3-5
	18		18

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Chem. 163	4	Zool. 232	5
Zool. 231	5	Zool. 274	4
Electives (upper division)	4	Electives (upper division)	7-9
Zool. 273	4		
	18		18

Candidates for the A.B. degree in Zoology must complete the following minimum number of credit hours in the subjects listed in addition to the University and College of Arts and Sciences general requirements: Mathematics, 6 hr. (must include Math. 3 and 4); Chemistry, 23 hr. (must include Chem. 1, 2, 115, 163, 233, 238); Physics, 8 hr.; Art 115; Biological Sciences, 38 hr. (must include Zool. 1 and 2 [Biol. 1 and 2 may be substituted], Zool. 231, 232, 251, 273, and 274, and 8 hr. of botany). A total of 128 semester hours is necessary for this degree, of which 124 hours are in subjects exclusive of required Military Science or Air Science, required Physical Education, and English 0. A minimum of 58 upper-division hours is also necessary.

Courses of Instruction

BIOLOGY

Lower Division

1, 2. General Biology. I, II. 4 hr. per sem. General introductory course.

51. Microbiology. I. 3 hr. Introduction to the study of microorganisms. Primarily for medical secretary students.

Upper Division

191. Honors Course. II. 3 hr. PR: Second semester of junior year, recommendation of adviser. Departmental majors only. Supervised reading and investigation.

192. Honors Course. I. 3 hr. PR: Biol. 191. Supervised reading investigation.

193. Honors Course. II. 3 hr. PR: Biol. 192. Thesis embodying results of work done in Biol. 191 and 192.

203. Natural History. S. 3 hr. PR: General biology or equiv. Lectures, demonstrations, and field trips designed to provide a brief survey of certain aspects of general biology suitable for elementary and high schools.

204. Biology Workshop. S. 3 hr. PR: Biol. 2 or equiv. Primarily for high school teachers of biology. Lectures, discussions, and trips to various campus facilities are designed to meet needs of the students enrolled. (Not open to biology majors.)

205. Principles of Evolution. I. S. 3 hr. PR: Biol. 2, Bot. 2, or Zool. 2. Introduction to the study of evolution.

206. Modern Concepts in Biology. S. 3 hr. PR: Biol. 2 or equiv. Designed to acquaint the advanced student or teacher with the latest methods and knowledge in the field of biology.

207. History of Biology. I. 3 hr. PR: Biol. 2. History of the development of biological knowledge, with philosophical and social backgrounds.

208. Great Texts of Biology. II. 1 hr. PR: Biol. 2 or equiv. Study of some of the great classics in biology, such as Theophrastus' *Enquiry Into Plants*, Vesalius' *Epitome*, Harvey's *Motion of the Heart and Blood*, Darwin's *Origin of Species*, and Mendel's *Experiments on Hybrid Plants*.

209. The Literature of Biology. I. 1 hr. PR: Biol. 2 or equiv. Consideration of the sources and forms of the literature, the development of bibliographies, and the preparation of scientific papers.

210. Biological Science for High School Teachers. S. 3 hr. PR: Biol. 2 or equiv. Study of biological demonstrations and experiments suitable for high school biology.

211. Microtechnique. II. 3 hr. PR: Biol. 2, or Zool. 2, or equiv. Theory and practice of making microscope preparations.

212. Biological Preparations. S. 3 hr. PR: Biol. 1. Methods for the preparation of microscope slides and other demonstration materials for high school biology classes. Emphasis will be on procedure using equipment and reagents commonly available to the teacher.

215. Cytology. II. 4 hr. PR: Biol. 2 or equiv. Cells, their structure and functions.

218. Advanced Biology. S. 4 hr. PR: Biol. 1 and 2. General course covering basic concepts, including energy flow, a survey of the plant and animal kingdoms, and a consideration of genetics and evolution.

221. General Ecology. I, II. 4 hr. PR: Biol. 1-2 or equiv., plus 4 hr. upper division. The relationships of plants and animals to their environment are studied to illustrate basic ecological principles.

281, 282. Molecular Biology. I, II. 7 hr. per sem. PR: Biol. 2, Physics 2, Chem. 238 or equiv. A full blending of the concepts and methods of physical science with those of life science in the study of fundamental biological processes as presented by an interdisciplinary group (biology, biochemistry, and biophysics) of instructors.

296, 297. Special Topics. I, II, S. 1-4 hr. PR: Consent. Critical studies of topics assigned by the instructor.

BOTANY

Lower Division

1, 2. General Botany. I, II. 4 hr. per sem. Introductory course in botany.

61. Systematic Botany. I. 2 hr. Identification of vascular plants. Primarily for Forestry students.

67. Dendrology. I. 4 hr. PR: Biol. 2. Classification and distribution of the timber trees of the United States. Primarily for Forestry students.

Upper Division

161. Systematic Botany. II. 4 hr. Identification and classification of vascular plants.

171. Plant Physiology. I, II. 3 hr. PR: Chem. 1, 2 or Physical Sci. 1, 2, or equiv. Physiochemical processes of plants.

191. Honors Course. II. 3 hr. PR: Second sem. of junior year and recommendation by adviser. Departmental majors only. Supervised reading and investigation.

192. Honors Course. I. 3 hr. PR: Bot. 191. Supervised reading and investigation.

193. Honors Course. II. 3 hr. PR: Bot. 192. Thesis embodying the results of the work done in Bot. 191 and 192.

201, 202. Seminar. I, II. 1 hr. Topics of general interest to botanists are considered.

204. The Plant Kingdom. I, II, S. 4 hr. Survey of the plant kingdom. Not open to Botany majors nor to students with credit in Bot. 2.

218. Economic Botany. II. 3 hr. PR: Biol. 2 or Bot. 2. Plants from the standpoint of their value to man.

221. Plant Ecology. I. 4 hr. PR: Biol. 2 or Bot. 2. Environmental relationships of plants.

224. Plant Communities. S. 3 hr. PR: Biol. 1 and 2 or equiv. Field studies in ecology.

227. Geographic Botany. I, S. 3 hr. PR: Bot. 2 or Biol. 2. Study of plant groupings and world-wide distribution of plants.

231. Plant Morphology. I. 4 hr. PR: Biol. or Bot. 2. Development and structure of algae and fungi.

232. Plant Morphology. II. 4 hr. PR: Biol. 2 or Bot. 2. Development and structure of bryophytes and vascular plants.

235. Plant Anatomy. I. 4 hr. PR: Bot. 2 or equiv. Anatomy of seed plants.

250. Fresh-Water Algae. I. 4 hr. PR: Biol. 2 or equiv. Taxonomy, cytology, and ecology of aquatic, aerial, and land forms of fresh-water algae.

255. Bryophytes. II. 2 hr. PR: Bot. 2 or Biol. 2. Identification of liverworts and mosses.

256. Vascular Cryptogams. II. 4 hr. PR: Bot. 1, 2 or Biol. 1, 2. Taxonomy, anatomy, cytology, and ecology of the club mosses, horsetails, and ferns.

261. Advanced Systematic Botany. I. 3 hr. PR: Bot. 161 or equiv. Taxonomy of pteridophytes, gymnosperms, and monocotyledons.

262. Advanced Systematic Botany. II. 3 hr. PR: Bot. 161 or equiv. Taxonomy of dicotyledons.

263. Taxonomy of Vascular Plants. S. 3 hr. Field studies in the taxonomy of higher plants.

265. Aquatic Seed Plants. I. 3 hr. PR: Biol. 2 or equiv. Classification, ecology, and economic importance of aquatic seed plants.

266. Flora of West Virginia. II, S. 3 hr. PR: Biol. 2 or equiv. Consideration of native plant life of the State.

268. Dendrology. II. 2 hr. PR: Biol. 2. Classification and distribution of the important trees of the United States.

296. 297. Special Topics. I, II, S. 1-4 hr. per sem. PR: Consent. Critical studies of topics assigned by the instructor.

ZOOLOGY

Lower Division

1, 2. General Zoology. I, II. 4 hr. Combines a study of the chief groups of animals in evolutionary sequence with introductions to other zoological subjects, including cytology, physiology, biochemistry, genetics, embryogeny, and ecology. Primarily for preprofessional students in medical and allied disciplines and for those whose major interests are animals. Students having credit for Biol. 1 and 2 may not receive credit for this course. Zool. 1 or Bot. 1 is a prerequisite for Zool. 2.

31. Human Anatomy. I. 4 hr. PR: Consent. Elementary anatomy.

Upper Division

191. Honors Course. II. 3 hr. PR: Second semester of junior year, recommendation by adviser. For departmental majors only. Supervised reading and investigation.

192. Honors Course. I. 3 hr. PR: Zool. 181. Supervised reading and investigation.

193. Honors Course. II. 3 hr. PR: Zool. 192. Thesis embodying the results of the work done in Zool. 191 and 192.

210. Animal Behavior. I. 3 hr. Facts and principles of individual and group behavior.

222. Field Studies of Invertebrates. S. 3 hr. Taxonomy and ecology of the invertebrates.

223. Field Studies of Vertebrates. S. 3 hr. Taxonomy and ecology of the vertebrates.

224. Limnology. I. 5 hr. PR: Zool. 2 or equiv. Physical, chemical, and biological characteristics of inland waters with an introduction to principles of blological productivity.

231. Comparative Anatomy. I. 5 hr. PR: Zool. 2 or equiv. Organs and systems of various vertebrates, together with other facts of interest concerning these animals.

232. Vertebrate Embryology. II. 5 hr. PR: Zool. 2 or equiv. Introductory study of developments of vertebrates, based on frogs, fowl, and mammals.

233. Comparative Histology. II. 4 hr. PR: Zool. 231 and consent. Limited to seniors and graduate students. Comparative study of tissues of the vertebrates.

235. Comparative Developmental Anatomy. II. 3 hr. PR: Zool. 231. Anatomy and development of the organs and systems of various vertebrates.

236. Comparative Neuroanatomy. II. 4 hr. PR: Zool. 2, 231 and consent. Comparative study of development and anatomy of the nervous systems of vertebrates.

237. Osteology. I. 2 hr. PR: Zool. 2 or equiv. Development and anatomy of the skeleton.

250. Animal Systematics. II. 2 hr. PR: Zool. 2 or equiv. Principles and practices in animal taxonomy.

251. Invertebrate Zoology. I. 4 hr. PR: Zool. 2 or equiv. Advanced study of animals without backbones.

255. Introduction to Human Parasitology. II. 4 hr. PR: Zool. 2 or equiv. Biological aspects of parasites and other animals of medical importance.

263. Ichthyology. II. 3 hr. PR: Zool. 2 or equiv. Evolution, taxonomy, anatomy, and physiology of fishes.

264. Fisheries Biology. II. 4 hr. PR: Zool. 2 or equiv. and Zool. 263. Fisheries management, emphasizing study of age and growth, population techniques, and concept of yield.

265. Ornithology. II. 3 hr. PR: Zool. 1 or equiv., consent. Field and laboratory studies on identification, migration, protection, nesting, and food habits of birds.

271. Human Physiology. I, II, S. 4 hr. Introductory course in the functions of man. This course may not be counted towards an advanced degree in biology.

272. Physiology of the Endocrines. II. 4 hr. PR: Comparative anat., or vertebrate embryology, and organic chem. Regulation of the organs of internal secretion, mechanisms of action of the hormones produced, and experimental techniques used in study of the endocrine system.

273, 274. Cellular Physiology. I, II. 4 hr. per sem. PR: Biol. 2 or Zool. 2, Chem. 238, and Physics 2 or equiv. Study of the molecular machinery of the cell and functions common to all forms of life.

276. Comparative Physiology. I. 4 hr. PR: Zool. 273 or equiv. Study of the diverse ways in which different kinds of animals meet their functional requirements.

296, 297. Special Topics. I, II, S. 1-4 hr. PR: Consent. Critical studies of topics to be assigned by the instructor.

CHEMISTRY

Laboratory Fees

A non-refundable fee is required of all students who take the following laboratory courses in Chemistry:

Course	*Per Semester*	*Course*	*Per Semester*
Chem. 1	$10.00	Chem. 238	$16.00
Chem. 2	10.00	Chem. 239	16.00
Chem. 3	12.00	Chem. 243	16.00
Chem. 4	12.00	Chem. 244	16.00
Chem. 105	12.00	Chem. 258	16.00
Chem. 115	12.00	Chem. 259	16.00
Chem. 131	12.00	Chem. 264	16.00
Chem. 141	12.00	Chem. 270	16.00
Chem. 142	12.00	Chem. 280	16.00
Chem. 163	12.00	Chem. 311	16.00
Chem. 170	16.00	Chem. 395	16.00
Chem. 202	16.00	Chem. 396	16.00
Chem. 209	16.00	Chem. 397	16.00
Chem. 210	16.00	Chem. 398	16.00
Chem. 214	16.00	Physical Science 1	10.00
Chem. 215	16.00	Physical Science 2	10.00
Chem. 233	16.00		

Note: A charge is made for excessive breakage in addition to the non-refundable fee.

Required Courses

Chemistry 1 and 2 or Chemistry 3 and 4 are prerequisite to all other courses in chemistry. Chemistry majors are required to take Chemistry 1, 2, 105 and 115, or Chemistry 3 and 4, and the following: Chemistry 201, 209, 214, 233, 238, 258, 259, 260, and 261; Mathematics 116 and 117; Physics 11 and 102, or the equivalent.

Bachelor of Science in Chemistry

The Bachelor of Science degree is designed for those students who desire to qualify for professional positions in industry and governmental services as well as those who plan to do graduate work in chemistry. Requirements for the Bachelor of Science degree are listed below. Electives must be chosen so as to satisfy the distribution of electives required for the A.B. degree. A total of 136 credit hours is required of which a minimum of 126 hours must be established in subjects exclusive of credits earned in required Physical Education, required Military Science or Air Science, English 0, and Math. 2.

Bachelor of Arts in Chemistry

The course requirements for the Bachelor of Arts degree with a major in chemistry are the same as for the Bachelor of Science degree in Chemistry with the following exceptions: (1) Chemistry 273 is not required; (2) the total including required Military Science or Air Science and Physical Education for men is 134 semester hours and for women the total is 128 semester hours; (3) nine semester hours of general electives must be substituted for chemistry electives.

FIRST YEAR				SECOND YEAR			
First Sem.	*Hr.*	*Second Sem.*	*Hr.*	*First Sem.*	*Hr.*	*Second Sem.*	*Hr.*
Chem. 3*	5	Chem. 4*	5	Chem. 233	4	Chem. 238	4
Math. 3	3	English 2	3	Physics 11	4	Physics 102	4
Math. 4	3	Math. 15	4	German 1	3	German 2	3
English 1	3	Mil. or Air Sci. 2	2	Math. 116	4	Math. 117	4
Mil. or Air Sci. 1	2	Phys. Ed.	1	Mil. or Air Sci. 3	2	Mil. or Air Sci. 4	2
Phys. Ed.	1	Elect. (A and S)	3				
	17		18		17		17

THIRD YEAR				FOURTH YEAR			
First Sem.	*Hr.*	*Second Sem.*	*Hr.*	*First Sem.*	*Hr.*	*Second Sem.*	*Hr.*
Chem. 214	3	Chem. 209	3	Chem. 201	3	Chem. Electives**	6
Chem. 258	1	Chem. 259	2	Chem. Electives**	4	Electives	10
Chem. 260	3	Chem. 261	3	Electives	9		
Chem. 273	2	German 122	3				
German 121	3	Elect. (A and S)	3				
Elect. (A and S)	3	Elect. (A and S)	3				
Elect. (A and S)	3						
	18		17		16		16

*Chem. 1, 2, 105 and 115 will be required for those students not qualified for Chem. 3 and 4.

**Must include at least one laboratory course in a field other than organic chemistry.

A second language, French or Russian, is recommended. Students desiring to pursue an honors program may include 4-6 hr. of Chemistry 245 and 246 as chemistry electives.

Courses of Instruction

Lower Division

1. General Chemistry. I, II. 4 hr. Beginning course in chemistry. Not open to students in English 0 unless qualified for Math. 3.

2. General Chemistry. I, II. 4 hr. PR: Chem. 1. Completes one year of general chemistry.

3. General Chemistry. I. 5 hr. PR: High school chemistry and concurrent enrollment in Math. 3, or more advanced mathematics. Primarily for students in pre-chemistry and chemical engineering.

4. General Chemistry. II. 5 hr. PR: Chem. 3. Primarily for students in pre-chemistry and chemical engineering.

Upper Division

105. Qualitative Analysis. I. 4 hr. PR: Chem. 2. Required of students whose major is chemistry unless Chem. 4 has been completed. Recommended for premedical and predental students.

115. Quantitative Analysis. I, II. 3 hr. PR: Chem. 2. For premedical, predental and premedical technology students. Required of chemistry majors unless Chem. 4 has been completed.

131. Organic Chemistry. I. 4 hr. PR: Chem. 2. For students in agriculture and home economics. 3 lect., 1 lab.

163. Physical Chemistry. I. 4 hr. PR: Chem. 2. Required of premedical and predental students. Recommended for geology majors and other non-chemistry majors. 3 lect., 1 lab.

141, 142. Assigned Topics. I, II. 1-3 hr. PR: Consent. Individual investigations under supervision of instructor.

170. Glass Working and Related Laboratory Techniques. II. 2 hr. PR: Chemistry major or consent. 1 lect., 1 lab. Offered in alternate years.

201. Intermediate Inorganic Chemistry. I. 3 hr. PR: Chem. 261 or concurrent enrollment. Required of chemistry majors.

202. Inorganic Syntheses. I. 2 hr. PR: Chem. 4 or Chem. 1, 2, and 115.

209. Intermediate Analytical Chemistry. II. 3 hr. PR: Chem. 261 or concurrent enrollment. Required of chemistry majors. 2 lect., 1 lab.

210. Instrumental Analysis. I. 3 hr. PR: Chem. 260 or consent.

214. Qualitative Organic Analysis. I. 3 hr. PR: Chem. 238. Required of chemistry majors. Recommended course following Chem. 238.

217. Polymer Chemistry. II. 2 hr. PR: Chem. 238, 261.

218. Principles of Chemistry. S. 4 hr. PR: At least 6 hr. of collegiate work in chemistry. In unusual instances this prerequisite might be waived if enrollee has been teaching chemistry. Special course for NSF Institute for secondary teachers.

233. Organic Chemistry. I, II. 4 hr. PR: Chem. 4 or 115. Required of students who major in chemistry, pharmacy, premedicine, predentistry and chemical engineering. 3 lect., 1 lab.

238. Organic Chemistry. II. 4 hr. PR: Chem. 233. Continuation of Chem. 233. 3 lect., 1 lab.

239. Organic Synthesis. I or II. 2 hr. PR: Chem. 238, 261.

243, 244. Selected Topics. I, II. 1-3 hr. PR: Consent. Individual investigations under supervision of instructor.

245, 246. Honors Course. I, II. 1-3 hr. PR: Consent. Research for students in the honors program.

247. Stereochemistry. I. 2 hr. PR: Chem. 238, 261, or consent. Open to seniors.

258. Physical Chemistry Laboratory. I. 1-2 hr. PR: Chem. 260 or concurrent enrollment. Required of chemistry majors.

259. Physical Chemistry Laboratory. II. 1-2 hr. PR: Chem. 258, 260, and 261 or concurrent enrollment. Required of all chemistry majors.

260. Physical Chemistry. I. 3 hr. PR: Chem. 233, Physics 102, Math. 117. Required of chemistry or chemical engineering majors.

261. Physical Chemistry. II. 3 hr. PR: Chem. 260. Continuation of Chem. 260.

262. Colloid and Surface Chemistry. II. 2 hr. PR: Physical chemistry or concurrent enrollment.

264. Physical Chemistry. I. 4 hr. PR: 11 hr. of college chemistry. For non-chemistry graduate students, particularly teachers of science in public schools. 3 lect., 1 lab.

270. Practical Infrared Spectroscopy. II. 3 hr. PR: Chem. 238, 261 or consent. A practical course for students in chemistry and related fields who may use infrared spectroscopy as a tool in research and applied science.

273. Chemical Literature. I. 2 hr. PR: Chem. 238. Study of procedures used for search of scientific literature.

277. Chemistry of Natural Products. II. 2 hr. PR: Chem. 238, 261 or consent. Chemistry of representative members of the principal groups of terpenoids. Offered in alternate years.

282. Chemistry of Natural Products. II. 2 hr. PR: Chem. 238 or consent. Chemistry of representative members of the principal groups of alkaloids. Offered in alternate years.

285. Nuclear Chemistry. II. 3 hr. PR: Chem. 260 or consent. Fundamentals of radioactivity as applied to chemistry and discussion of tracer applications.

286. Introductory Molecular Structure. II. 3 hr. PR: Chem. 260. Introduction to the quantum theory of chemical bonding and discussion of experimental methods for determining molecular structure and bond properties.

289. Chemical Thermodynamics. I. 3 hr. PR: Chem. 261, Math. 117.

ECONOMICS

Since 1952 the College of Commerce has offered all courses in Economics and has granted the B.S. degree in Economics, while the College of Arts and Sciences has continued to grant the A.B. degree in this field.

The course of study leading to the B.S. degree is aimed primarily at preparing the student for a career as an economist in business or government. Consequently, the student selecting this program is required to complete courses in business administration, as well as courses in economics. About one-half of his upper-division electives must be taken in courses offered by the College of Commerce.

The program leading to the A.B. degree in Economics is designed for students who wish to continue fundamental training in economics with a liberal arts education. Of the total of 128 hours required for graduation, 30 or more credit hours are available for elective subjects. There are two principal requirements which apply to the A.B. program, but do not apply to the B.S. program. These are the requirements that the student must complete 12 hours in a foreign language and 9 upper-division hours in a minor field other than economics.

A candidate for the A.B. degree with a major in Economics must complete a minimum of 128 semester hours for graduation. English 0 and Mathematics 2, if taken, may not be counted in this total, and required courses in Physical Education and required courses in basic Military Science or Air Science may be counted only to the extent of 4 hours. He must also complete at least 27 semester hours in upper-division economics courses. A minimum of 58 semester hours must be completed in the upper-division level. Of these, not less than 9 upper-division hours must be earned in a minor field approved by the candidate's adviser.

Lower-Division Program

The curriculum of the lower division is designed to provide a background for the study of Economics. The following courses are required and students are expected to complete them within the first two years in residence at the University:

FIRST YEAR	Hr.	SECOND YEAR	Hr.
English 1 and 2—Composition	6	Economics 51 and 52—Principles	6
Foreign Language	6	Foreign Language	6
Hist. 1 and 2—World Civilization or Humanities 1 and 2	6	Hist. 52 and 53—Amer. History or Pol. Sci. 2 and 120—	6
Laboratory Science*	8	Mathematics 3—College Algebra	3
Mil. or Air Sci. 1 and 2	4	Mil. or Air Sci. 3 and 4	4
Phys. Ed.—General Program	2	Phys. Ed.—Women's Program	2
Electives—Women**	3	Speech 11—Oral Communication	3
		Electives—Men**	8
		Electives—Women**	10
TOTAL	32	TOTAL	36

*A laboratory science may be chosen from among biology, botany, chemistry, geology, physics, physical science, or zoology.

**Electives must be taken during the four-year program to satisfy the University Core Curriculum Requirements. See page 46 for a complete explanation of requirements.

Upper-Division Program

An Economics major must complete a minimum of 27 upper-division hours in Economics, including the following courses:

Econ. 111—Money and Banking
Econ. 125—Statistics
Econ. 211—Micro Economic Analysis
Econ. 212—Macro Economic Analysis
Econ. 222—History of Economic Thought
Econ. 241—Public Finance

Thus, in addition to the above required courses, the candidate must complete a minimum of 9 semester hours of upper-division elective courses in Economics.

Courses of Instruction*

Lower Division

51. Principles of Economics. I, II. 3 hr. PR: Sophomore standing. Principles of resource allocation, income, output and price determination under different competitive conditions; money, banking, and monetary policy; national income, unemployment, and fiscal policy; taxation and government spending; international economics, underdeveloped areas, and comparative economic systems.

52. Principles of Economics. I, II. 3 hr. PR: Econ. 1. Continuation of Econ. 1.

*Upper Division**

111. Money and Banking. I, II. 3 hr. Our system of monetary and banking arrangements, viewed in relation to functioning of the economic system as a whole.

115. Labor Economics. I, II. 3 hr. Introduction to labor economics and labor relations in industry, including the interaction of economic forces, union policies, personnel practices, and labor law.

*Economics 52 is prerequisite to all upper-division courses in economics.

125. Statistics. I, II. 3 hr. PR: Math. 2 or 3. Basic statistical methods employed in collection, presentation, analysis, and interpretation of business and economic data, such as analysis of frequency distribution, time series, inference, index numbers, and correlation.

205. Current Economic Problems. S. 3 hr. PR: Econ. 51 and 52 or consent. Education majors only. A course designed to acquaint public school teachers with reliable source material in economics and to instruct them in studying current economic problems.

210. Comparative Economic Systems. I or II. 3 hr. Structure and processes of existing economic systems throughout the world including review of basic principles of free enterprise, socialistic, communistic, and fascistic societies. Comprehensive analysis based on current and recent experiments in these economies.

211. Micro Economic Analysis. I. 3 hr. Study of price and output determination and resource allocation in the firm under various competitive conditions.

212. Macro Economic Analysis. II. 3 hr. Analysis of the forces which determine the level of income, employment, and output. Particular attention is given to consumer behavior, investment determination, and government fiscal policy.

217. Trade Unionism. I or II. 3 hr. PR: Econ. 115 or consent. Analysis of the structure, government, attitudes, and policies of organized labor; the implications of union policy.

218. Collective Bargaining. I or II. 3 hr. PR: Econ. 115 or consent. Theory and practice of collective bargaining; including contract issues, types of relationships, and the role of government policy.

219. Economics of Wages. I or II. 3 hr. PR: Econ. 115 or consent. Determination of wage levels and structure; functioning and organization of labor markets.

220. Introduction to Quantitative Analysis. I or II. 3 hr. PR: Econ. 125. Study of the principal mathematical techniques employed in economic analysis; an introduction to econometrics.

222. History of Economic Thought. II. 3 hr. Economic ideas in perspective of historic development.

225. Transportation. I. 3 hr. Development of an inland transportation system and relations and policies of transport agencies.

230. Public Utilities. II. 3 hr. Development of regulation; economics of valuation and rate making.

235. Economic Growth and Fluctuations. I or II. 3 hr. PR: Econ. 125 or consent. Industrial fluctuations; causes and possible remedies.

241. Public Finance. I. 3 hr. Governmental fiscal organizations and policy; taxes and tax systems with particular emphasis upon the Federal Government and the State of West Virginia.

245. Government and Business. I or II. 3 hr. Government in its role of adviser and umpire; analysis of governmental policies and practices affecting business.

250. International Economics. I or II. 3 hr. Development of trade among nations; theories of trade; policies, physical factors, trends, and barriers in international economics.

251. Economic Development. I or II. 3 hr. Comprehensive study of the problems, changes, and principal policy issues faced by non-industrialized countries in the process of economic development.

255. Regional Economics. I or II. 3 hr. Analysis of the factors that promote or deter the economic growth of a region, with emphasis on such matters as

population shifts, economic base studies, industrial location analyses, input-output techniques, regional income estimation, local multiplier and cycle concepts, and the role of government in regional growth.

256. Advanced Statistics. II. 3 hr. PR: Econ. 125 or equiv. Advanced approach to statistical analysis with emphasis on probability, inference, and multivaried statistical techniques.

ENGLISH LANGUAGE AND LITERATURE

A student who expects to major in English should complete lower-division survey courses in English and American literature (English 3, 4, 5, and 6). These courses, however, are not absolute prerequisites to entrance into the program of major studies in English. If a student who is accepted as a major has not had the lower-division survey courses, he will be expected to compensate for this deficiency by taking certain upper-division courses that will be suggested by the departmental adviser.

Advisers of upper-division students who are not English majors may schedule them for English courses in the "100" series without regard to prerequisites. In order to qualify for registration in a course in the "200" series, a student is expected to have had prior work in upper-division courses.

Teacher Certification for English Majors

A student may take the A.B. degree in the College of Arts and Sciences with a major in English and at the same time qualify for teacher certification. Such a student will satisfy the requirements for the first teaching field in English while completing courses for his major. His second teaching field will be correlated with his minor subject in Arts and Sciences. He will complete 21 hours of prescribed courses in Education. The second teaching field for English teachers may be Speech, Library Science, Art, French, Spanish, German, Latin, or Social Studies. Other combinations are possible.

During the first two years, the courses chosen are largely governed by the basic two-year program required of all candidates for teacher certification. See the College of Education section of this bulletin. These requirements satisfy most of the group or "distribution" requirements of Arts and Sciences.

By carefully planning his program, a student may complete all requirements for the A.B. degree and for teacher certification within four years. A mimeographed summary of all requirements which must be met in the combined program is available at the office of the Department of English.

Choice of Two Majors in English

The prescribed upper-division program for majors in English requires the student to complete courses in both English literature and American literature and allows him to determine the relative emphasis he will give to each. Three upper-division courses (Group "A") are required of all majors. Credit for this group is 9 hours. Twelve additional hours are chosen from groups "B" and "C" according to the student's desire to emphasize English literature or American literature. The plan is shown as follows:

GROUP A (9 hr. required of all English majors):

1. English 142. Shakespeare. 3 hr.
2. English 234. Chaucer. 3 hr.
3. English 230. History of the English Language. 3 hr.

Choice of twelve additional hours of upper-division work, as follows:

Emphasis on English Literature: 9 hr. from Group B; 3 hr. from Group C.
Emphasis on American Literature: 3 hr. from Group B; 9 hr. from Group C.

GROUP B:

1. English 138. English Literature, 1660-1744. 3 hr.
2. English 139. English Literature, 1744-1798. 3 hr.
3. English 140. Elizabethan Poetry and Prose. 3 hr.
4. English 141. Literature of the 17th Century. 3 hr.
5. English 249. The Romantic Movement. 3 hr.
6. English 257. Victorian Poetry. 3 hr.
7. English 258. Victorian Prose. 3 hr.

The departmental adviser may allow the substitution of certain cognate period courses in English literature for any of those listed in this group; namely, courses in the literature of the Early English period, the Middle Ages, the 16th, 17th, 18th, 19th, and 20th centuries.

GROUP C:

1. English 166. American Fiction. 3 hr.
2. English 222. American Biography. 3 hr.
3. English 239. Southern Writers. 3 hr.
4. English 250. American Romanticism. 3 hr.
5. English 270. American Poetry. 3 hr.

English majors are strongly advised to study a second foreign language. For the first choice of a foreign language, the Department recommends French or German.

History 106 and 107 were formerly required of all English majors. The requirement is now not absolute; but the English major will schedule these courses unless he is precluded from doing so by the demands of the other parts of his program of studies.

Suggested Semester Programs

The following lower-division course program is suggested for pre-English majors. The "electives" refer to groups 1, 2, 4, and 5 of "Distribution Requirements" in Arts and Sciences, and the numbers refer to these groups. The footnotes indicate choices that should be made by the teacher-trainee in order to combine these requirements with those of the teacher-training curriculum.

For students entering the University July 1, 1964, or later, the Distribution Requirements referred to above are superseded by the Core Curriculum requirements. If the student is subject to these requirements, he will need to alter the following suggested study programs accordingly.

FIRST YEAR*				SECOND YEAR*			
First Sem.	*Hr.*	*Second Sem.*	*Hr.*	*First Sem.*	*Hr.*	*Second Sem.*	*Hr.*
English 1	3	English 2	3	English 3 or 5	3	English 4 or 6	3
English 3 or 5	3	English 4 or 6	3	Foreign language	3	Foreign language	3
Foreign language	3	Laboratory Sci.	4	Electives (Groups 2, 4, 5)	9-11	Electives (Groups 2, 4, 5)	9-11
Laboratory Sci.	4	Foreign language	3	Phys. Ed.	1	Phys. Ed.	1
History or Humanities	3-4	History or Humanities	3-4	Mil. or Air Sci.	3 2	Mil. or Air Sci.	4 2
Phys. Ed.	1	Phys. Ed.	1				
Mil. or Air Sci.	1 2	Mil. or Air Sci.	2 2				
	17-19		17-19		17-19		17-19

**Special Note for Students Preparing for Teacher Certification*:

For the science requirement, choose the general course in Biology or in Physical Science. To satisfy Arts and Sciences Group 4 choose Speech 3, 6, 11, or 29. For Group 2, take Social Sci. 1 and 2. Other courses to work into your program as early as possible are Music 10 and Art 30. If your second field is to be Social Studies, you may postpone satisfying Arts and Sciences Group 5, and take Geography as upper-division credit. In the last semester of your second year take Educ. 105. For guidance in all these matters, consult with the College of Education.

THIRD YEAR**				FOURTH YEAR**			
First Sem.	*Hr.*	*Second Sem.*	*Hr.*	*First Sem.*	*Hr.*	*Second Sem.*	*Hr.*
English 142	3	Upper-division English B or C	3	English 234	3	English 230	3
English (Groups B or C)	3	Minor Subject	3-6	English (Groups B or C)	3	English (Groups B or C)	3
Minor Subject	3	Electives	8-12	Minor Subject	3	Minor Subject	3
Electives	8-10			Electives	9	Electives	9
	17-19		17-19		18		18

**For those preparing for teacher certification, the hours allowed for "electives" will be devoted to satisfying the requirements for certification. The requirements that must be satisfied are as follows:

(a) Any courses in the two-year general program for teachers that may not have been taken during the student's lower-division years. Check especially for English 18; Hist. 1 and 2 or Humanities 1 and 2; Social Sci. 1, 2; Music 10; Art 30; Health Educ. 101.

(b) Certain specific requirements for the English first teaching field, if not already met: Speech 3, 6, 11, or 29; 5 to 6 hr. additional, chosen from Journ. 215 (2 hr.), Lib. Sci. 1 or 101 (3 hr.), Speech 162 (3 hr.).

(c) Requirements of a second teaching field, insofar as they do not coincide with the student's Arts and Sciences minor.

(d) Twenty hours of Education, including practice teaching.

Honors Program

At the beginning of the second semester of his junior year, an English major who has achieved an overall grade-point average of 3.0 or better, and whose record in English studies is above 3.0, may apply for admission to the Honors Program of the Department. (See page 128).

Courses of Instruction

Lower Division

0. English Composition. I, II. 3 hr. Required of all students who fail to qualify for English 1 under University regulations.

1. Composition and Rhetoric. I, II. 3 hr. Required of all candidates for the bachelor's degree in all colleges. Advanced sections are provided for students who made exceptionally high grades on the Freshman English placement test.

2. Composition and Rhetoric. I, II. 3 hr. Continuation of English 1. Required of all candidates for the bachelor's degree in all colleges. Advanced sections are provided for students who made exceptionally high grades on the entrance tests in English placement tests.

3. Survey: English Literature. I, II. 3 hr. English authors from Beowulf to Burns and readings from their works. Upperclassmen may substitute English 163 for this course.

4. Survey: English Literature. I, II. 3 hr. English authors from Robert Burns to the present and readings from their works. Upperclassmen may substitute English 164 for this course.

5. American Literature. I, II. 3 hr. American authors to 1870 with readings from their works.

6. American Literature. I, II. 3 hr. American poetry and prose from 1870 to the present. Continuation of English 5.

18. Advanced English Composition (Written and Spoken). I, II. 3 hr. PR: English 1 and 2. Practice in the organization of thought and in the correct and effective use of the language in writing and speaking, with emphasis on the various types and techniques of exposition.

25. Introduction to Poetry. I, II. 3 hr. Nontechnical approach to poems selected for their intrinsic interest and ease of comprehension. Designed to instruct and give pleasure.

26. Introduction to Fiction. I, II. 3 hr. Companion course to English 25 and English 27 in the reading of works of fiction selected for their interest and significance to the general reader. Emphasis on appreciation and enjoyment.

27. Introduction to Drama. I, II. 3 hr. How to read, enjoy, and judge significant plays. Designed for the general student, not the specialist, with a view to developing a lasting interest in dramatic literature.

35. Types of Literature. I, II. 3 hr. Selected works of English, American, and world authors, read for appreciation and enjoyment, with analysis of each as a representative of the genre to which it belongs. For students from all colleges.

36. Types of Literature. I, II. 3 hr. Continuation of English 35, with emphasis on examples of prose fiction by English, American, and European writers. May be taken independently of English 35.

Upper Division

100. Honors Course. I, II. 3 hr. Independent reading and study. For students admitted to the Honors Program in the second semester of their junior year.

115. Creative Writing: Narration (Short Story). II. 3 hr. Purpose and pattern of the modern short story; study of examples in the current periodicals; special assignments and conferences with individual students on a minimum number of short stories.

123. Business English. I, II. 3 hr. PR: English 18. Technical writing; assembling and analysis of economic and commercial data; writing of reports; business correspondence. Primarily for students enrolled in the College of Commerce.

126. Advanced Composition. I, II. 3 hr. Technical forms of writing; designed particularly for students in science and engineering.

127. Introduction to Literature (Part I). I, II. 3 hr. PR: English 1, 2. Reading of stories, novels, plays, and poems for understanding and enjoyment. Arranged according to types and themes rather than according to literary history, and designed for students from all fields. Satisfies any general requirement in literature.

128. Introduction to Literature (Part II). II. 3 hr. PR: English 1, 2. Continuation of English 127, with emphasis upon fiction, drama, and poetry to be read for understanding and pleasure. May be taken independently of English 127.

129. Words and Usage. II. 3 hr. Practical vocabulary building, English grammar and usage. Attention is given to the derivation, history, and meaning of words, and to the principles of syntax and grammar.

138. English Literature, 1660-1744. I. 3 hr. Literature from the Restoration to the death of Pope, exclusive of the drama.

139. English Literature, 1744-1798. II. 3 hr. Literature from the death of Pope to the publication of Wordsworth's *Lyrical Ballads*, exclusive of the drama.

140. Elizabethan Poetry and Prose. I. 3 hr. The Renaissance in England as manifested in the great variety of nondramatic literary works of the sixteenth century, with emphasis on the major writers of the reign of Elizabeth.

141. Literature of the 17th Century. II. 3 hr. Major poets and prose writers of the 17th century, with the exception of dramatic writings.

142. Shakespeare. I, II. 3 hr. Twelve of Shakespeare's most important plays.

160. Contemporary Literature. I. 3 hr. Modern British and American poets and prose writers—including novelists, short-story writers, dramatists, and essayists. Chronology is roughly from 1900 to 1925.

161. Contemporary Literature. II. 3 hr. Continuation of English 160 from approximately 1925 to the present time.

163. English Literature. I, II. 3 hr. Survey: English Literature from the beginning to 1800. May be substituted for English 3 but may not be elected by students who already have credit for English 3.

164. English Literature. I, II. 3 hr. Continuation of English 163 from 1800 to present. May be substituted for English 4 but may not be elected by students who already have credit for English 4.

166. American Fiction. I, II. 3 hr. The reading of ten or more of the most important American novels from Hawthorne to the present day, each considered as a work of art reflecting a significant view of life. Lectures on the works of principal authors, with class discussion of particular books.

173. Poetry. I, II. 3 hr. Appreciation and enjoyment of poems through critical and analytical reading. Studies in the various types of poetry, and of the language, imagery, and techniques of poetic expression.

175. The Short Story. I. 2 hr. The historical development of the short story and the schools into which the work of short-story writers is divided.

180. Bible Literature: Old Testament. I. 3 hr. The various types of literature exemplified in the Old Testament, read for their intrinsic merit and for their historical and cultural significance. Continued in English 181.

181. Bible Literature: New Testament and Apocrypha. II. 3 hr. The contents of the New Testament, its literary quality, with consideration of its historical relations and of the relationships of the several writers represented. Because of the difficulty of treating the wealth of materials of the Old Testament during the one semester of English 180, the first part of this course will be devoted to continuation of the study of certain books of the Old Testament.

198. Honors Course. I, II. 3 hr. For the first semester of the senior year of students admitted to the Honors Program.

199. Honors Course. I, II. 3 hr. For students in the Honors Program; final semester of senior year.

222. Modern American Biography. I. 3 hr. A selection of the most significant interesting biographies and autobiographies of Americans of distinction in literature, the arts, and public life.

223. Modern British Biography. II. 3 hr. Representative works by such eminent masters of biography as Lytton Strachey, Sir Osbert Sitwell, Lord David Cecil, Sean O'Casey, Hugh Kingsmill, and others.

*224. Literary Criticism. II. 3 hr. Literary criticism from Aristotle to modern times.

225. Recent Literary Criticism. II. 3 hr. A brief survey of the theories and essays of four major schools of modern criticism and an application of these theories to a novel, a play, and selected poems and short stories.

228. Advanced Grammar. I, II. 3 hr. Descriptive grammar, the parts of speech, construction, and methods of diagramming.

230. History of the English Language. I. 3 hr. The nature of the language, questions of origin, language families, development, and relationships of English as one of the Indo-European languages.

*Given only in alternate years.

*231. Old English. I. 3 hr. Anglo-Saxon grammar, with selected reading from the literature of the period.

*232. Beowulf. II. 3 hr. PR: English 231. Continuation of the study of Old English; critical reading of *Beowulf*.

234. Chaucer. I. 3 hr. Chaucer's *Canterbury Tales* and *Troilus* and *Criseyde*. In addition to an understanding and appreciation of Chaucer's literary work, the student is expected to acquire an adequate knowledge of Chaucer's language.

235. Shakespeare. I. 3 hr. Intensive study of a limited number of Shakespeare's major plays; close reading of the text, with attention to textual history and the history of scholarship, interpretation, and criticism dealing with each play.

239. Southern Writers. II. 3 hr. Examination of twentieth-century Southern essayists, poets, short-story writers, and novelists in relation to the ideological background.

242. Literature for Teachers. S. 3 hr. Study and appreciation of selected works of American authors, with special reference to the high-school curriculum.

243. Literature for Teachers. S. 3 hr. Study and appreciation of selected works of English authors. Recommended for teachers of high-school English.

244. Literature of the Sixteenth Century. I. 3 hr. Literature of the Renaissance in England, with emphasis on the major authors and non-dramatic genres and on the relations of English literature to Continental literature.

245. Literature of the Seventeenth Century. II. 3 hr. The major authors and principal themes of English literature during the period, with due attention to the political and social background of the time, especially the struggle between Cavalier and Puritan.

247. Literature of the Eighteenth Century. I. 3 hr. Literature of the period 1700-1750, studied in relation to the social, political, and religious movements of the time.

248. Literature of the Eighteenth Century. II. 3 hr. Continuation of English 247, covering the latter half of the century. May be taken independently of English 247.

249. The Romantic Movement. I. 3 hr. The works of Wordsworth, Coleridge, and Keats, together with an introduction to works of scholarship in the field of English Romanticism.

250. American Romanticism. II. 3 hr. The writings of Ralph Waldo Emerson, Henry David Thoreau, and Nathaniel Hawthorne and the relations of these men to the history of their own time, and their contributions to American thought and art.

252. English Literature, 1880-1914. II. 3 hr. The more important writers and literary movements of the late Victorian and the Edwardian periods with emphasis on Hardy, Housman, Hopkins, Henley, Pater, Gissing, Moore, Butler, and the writers of the "aesthetic movement."

*253. Pre-Shakespearean Drama. I. 3 hr. Medieval drama from its beginning to the middle of the 16th century.

*254. Elizabethan Drama. II. 3 hr. Dramatists of the Elizabethan period, exclusive of Shakespeare.

*255. Restoration and Eighteenth Century Drama. I. 3 hr. Persistent forms and new developments in the drama of the period.

*Given only in alternate years.

256. Modern Drama. II. 3 hr. World drama from Ibsen to the present day.

257. Victorian Poetry. I. 3 hr. The major Victorian poets—Tennyson, Browning, Arnold, Rossetti, Morris, Swinburne, Fitzgerald, and a few of the later Victorian poets.

258. Victorian Prose. II. 3 hr. Nonfictional writings of the great Victorian prose critics: Carlyle, Ruskin, Arnold, Newman, Macaulay, Huxley, Morris.

259. Dramatic Art of Shakespeare. II. 3 hr. A study of several of Shakespeare's histories, comedies, and tragedies, showing the chronological development of his art and matters of stage presentation in Shakespeare's age.

260. Studies in Shakespearean Comedy. I, II. 3 hr. PR: English 142, or consent. Textual and dramatic study of representative comedies.

261. Technique of the Drama. I. 2 hr. Dramatic structure, with emphasis upon appreciation.

262. Study of Selected Authors. (American). I, II. 3 hr. The works of a principal American author, or of more than one, as announced when the course is scheduled.

263. Study of Selected Authors. (English). I, II. 3 hr. The works of one or more of the principal English authors, as announced in the schedule when the course is listed.

*264. Spenser. I. 3 hr. Spenser's minor poems and *The Faerie Queene;* forms and sources, purpose of the great epic, social, political, and religious allegory.

265. Bryon and Shelley. II. 3 hr. Reading and study of the works of two poets of the later Romantic Movement, together with works of criticism and scholarship related to the period.

267. Milton. I, II. 3 hr. A study of Milton's poems and of a few selected prose works.

270. American Poetry. I. 3 hr. Major American poets of the nineteenth and twentieth centuries—Bryant, Poe, Emerson, Longfellow, Whitman, Dickinson, Frost, Eliot.

272. Folk Literature. II. 3 hr. The folk ballad, its origin, history, and literary significance, based on Child's collection and on American ballad collections.

275. The English Novel to the Time of Scott. I. 3 hr. The English novel from the 16th century to the time of Scott, showing the development of the novelistic art from early narrative beginnings.

276. The English Novel, 1832-1900. II. 3 hr. Continuation of English 275. Development of the English novel from the early 19th century to the beginning of the 20th century.

278. Tragedy. II. 3 hr. Masterpieces of tragedy from Greek times to modern, with consideration of the changing concepts of tragedy and of the ethical and ideological values reflected in the works of major tragic authors.

280. The Modern Novel. I, II. 3 hr. The twentieth-century novel, with emphasis upon the works of selected British novelists.

291. Introduction to Literary Research. I, II. 2 or 3 hr. Lectures and exercises in research problems to prepare the student for such work in graduate and professional schools.

*Given only in alternate years.

FOREIGN LANGUAGES

The Department of Foreign Languages offers work in foreign language, literature, and culture. Areas included are French, Spanish, Italian, German, Russian, Latin, Greek, Hebrew, Linguistics, Language Teaching Methods, and Bibliography and Research. A student may be a candidate for an A.B. degree, with a major or minor in French, Spanish, German, or Latin, or with a minor in Russian or Greek. Students whose grades have frequently fallen below "B" in language work in the lower division should not select a foreign language as a major or minor. At least 36 hours of work in a given language constitutes a major and 24 hours of work a minor. In addition, all foreign language majors must take Linguistics 111. In most cases the department recommends that students who major in a foreign language should minor in a second. This is not a requirement, however, and other fields may be offered with the approval of the department chairman. Students who wish to earn professional certificates as elementary or secondary foreign language teachers are advised to consult the College of Education section of this bulletin. Students who have completed two or more years of study of a foreign language in high school can receive no credit towards a degree in the College of Arts and Sciences for either semester of the elementary work in that language.

Major in French

Requirements: French 1 and 2 or equiv., French 3 and 4, 103 and 104, 109, 110, 115, 116, 118, and 231.

Suggested Program:

FIRST YEAR				SECOND YEAR			
First Sem.	*Hr.*	*Second Sem.*	*Hr.*	*First Sem.*	*Hr.*	*Second Sem.*	*Hr.*
French 3*	3	French 4*	3	French 103	3	French 104	3
English 1	3	English 2	3	Minor subject	3-6	Minor subject	3-6
Humanities 1	3	Humanities 2	3	Linguistics 111	3	Electives Group B and/or C	3-7
Electives Group B and/or C	3-7	Electives Group B and/or C	3-7	Electives Group B and/or C	3-4	Phys. Ed.	1
Phys. Ed.	1	Phys. Ed.	1	Phys. Ed.	1	Mil. or Air Sci. 4	2
Mil. or Air Sci. 1	2	Mil. or Air Sci. 2	2	Mil. or Air Sci. 3	2		
	15-19		15-19		15-19		15-19

THIRD YEAR				FOURTH YEAR			
First Sem.	*Hr.*	*Second Sem.*	*Hr.*	*First Sem.*	*Hr.*	*Second Sem.*	*Hr.*
French 109	3	French 110	3	French 118	3	French 231	3
French 115	3	French 116	3	Minor subject and electives	15	Minor subject and electives	15
Minor subject and electives	12	Minor subject and electives	12				
	17-18		17-18		17-18		17-18

*If a student has not had French in high school he will take French 1 and 2 in his first year and will take French 3 and 4 concurrently with French 103 and 104 in his second year.

Major in Spanish

Requirements: Spanish 1 and 2 or equiv., Spanish 3 and 4, 103 and 104, 109, 110, and 12 hr. of literature courses from the following: Spanish 211, 212, 217, 218, 221, and 222.

Suggested Program:

FIRST YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Spanish 3*	3	Spanish 4*	3
English 1	3	English 2	3
Humanities 1	3	Humanities 2	3
Electives Group B and/or C	3-7	Electives Group B and/or C	3-7
Phys. Ed.	1	Phys. Ed.	1
Mil. or Air Sci. 1	2	Mil. or Air Sci. 2	2
	15-19		15-19

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Spanish 103	3	Spanish 104	3
Minor subject	3-6	Minor subject	3-6
Electives Group B and/or C	3-7	Electives Group B and/or C	3-7
Phys. Ed.	1	Phys. Ed.	1
Mil. or Air Sci. 3	2	Mil. or Air Sci. 4	2
	15-19		15-19

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Spanish 109	3	Spanish 110	3
Spanish 211 or 217	3	Spanish 212 or 218	3
Minor subject and electives	12	Minor subject and electives	12
	17-18		17-18

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Spanish 221	3	Spanish 222	3
Minor subject and electives	15	Minor subject and electives	15
	17-18		17-18

*If a student has not had Spanish in high school he will take Spanish 1 and 2 in his first year and will take Spanish 3 and 4 concurrently with Spanish 103 and 104 in his second year.

Major in German

Requirements: German 1 and 2 or equiv., German 3 and 4, 103 and 104, 109, 110, and at least 12 hr. of additional upper-division courses in German literature or Germanic linguistics. (See Linguistics 211, 212, 251, 252, 271, 272, 281, and 282.)

Suggested Program:

FIRST YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
German 1	3	German 2	3
English 1	3	English 2	3
Humanities 1	3	Humanities 2	3
Electives Group B and/or C	3-7	Electives Group B and/or C	3-7
Phys. Ed.	1	Phys. Ed.	1
Mil. or Air Sci. 1	2	Mil. or Air Sci. 2	2
	15-19		15-19

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
German 3	3	German 4	3
German 103	3	German 104	3
Minor subject	0-3	Minor subject	0-3
Linguistics 111	3	Electives Group B and/or C	3-7
Electives Group B and/or C	0-4	Phys. Ed.	1
Phys. Ed.	1	Mil. or Air Sci. 4	2
Mil. or Air Sci. 3	2		
	15-19		15-19

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
German 109	3	German 110	3
German elective	3	German elective	3
Minor subject	6	Minor subject	6
Electives	3-6	Electives	3-6
	15-18		15-18

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
German	6	German	3
Electives	9-12	Electives	12-15
	15-18		15-18

Major in Latin

Requirements: Latin 1 and 2 or equiv., Latin 3 and 4, 101, 109, 110, 121, 122, and at least 6 additional hours of upper-division courses in Latin.

Suggested Program:

FIRST YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Latin 3	3	Latin 4	3
English 1	3	English 2	3
Humanities 1	3	Humanities 2	3
Electives Group B and/or C	3-7	Electives Group B and/or C	3-7
Phys. Ed.	1	Phys. Ed.	1
Mil. or Air Sci. 1	2	Mil. or Air Sci. 2	2
	15-19		15-19

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Latin 101	3	Latin 102	3
Latin 109	3	Latin 110	3
Minor subject	0-3	Minor subject	0-3
Linguistics 111	3	Electives Group B and/or C	3-7
Electives Group B and/or C	0-4	Phys. Ed.	1
Phys. Ed.	1	Mil. or Air Sci 4	2
Mil. or Air Sci. 3	2		
	15-19		15-19

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Latin 121	3	Latin 122	3
Latin elective	3	Latin elective	3
Minor subject	6	Minor subject	6
Electives	3-6	Electives	3-6
	15-18		15-18

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Latin	6	Latin	3
Electives	9-12	Electives	12-15
	15-18		15-18

Courses of Instruction

FRENCH

Lower Division

1. Elementary French. I, II. 3 hr.

2. Elementary French. I, II. 3 hr. Continuation of French 1.

3. Intermediate French. I, II. 3 hr. Reading of modern French prose.

4. Intermediate French. II. 3 hr. Continuation of French 3.

Upper Division

103. Elementary Conversation. I. 3 hr. PR: French 3 and 4, or consent.

104. Elementary Conversation. II. 3 hr. PR: French 103 or consent.

109. Grammar and Conversation. I. 3 hr. PR: 12 hr. of French, or equiv.

110. Advanced Conversation. II. 3 hr. PR: French 109, or equiv.

115. The Classical School. I. 3 hr. PR: 12 hr. of French, or equiv.

116. Literature of the Eighteenth Century. II. 3 hr. PR: 12 hr. of French, or equiv.

118. Literature of the Nineteenth Century. I. 3 hr. PR: 12 hr. of French, or equiv.

151. French for Public Schools. I. 3 hr. PR: 12 hr. of upper-division French, including French 103, 104, and 109. An intensive study of conversational French with emphasis on teaching methods in the elementary school.

152. French for Public Schools. II. 3 hr. Continuation of French 151.

203. Refresher Course in Conversational French. I. 3 hr. PR: Consent.

217. French Civilization. II. 3 hr. PR: 12 hr. of French.

221. The Romantic Movement. I. 3 hr. PR: A.B. in French, or consent.

222. French Realism. II. 3 hr. PR: A.B. in French, or consent.

226. Literary Criticism. II. 3 hr. PR: A.B. in French, or consent.

227. Graduate Reading in French. No credit. A special course to prepare Ph.D. candidates for the reading examination in French.

229. Literature of the 16th Century. I. 3 hr. PR: A.B. in French, or consent.

231. Phonetics and Pronunciation. II. 3 hr. PR: 18 hr. of French, or equiv.

237. Moliere. II. 3 hr. PR: A.B. in French, or consent.

241. French Structural Linguistics. 4 hr. PR: 12 hr. of French. Special course for the NDEA Language Institute.

242. Methods in French Secondary Teaching. 4 hr. PR: 12 hr. of French. Special course for the NDEA Language Institute.

244. Explication De Textes. II. 3 hr. PR: 18 hr. of French, or equiv.

271. The Modern Novel to 1930. I. 3 hr. PR: A.B. in French, or consent.

272. The Novel After 1930. II. 3 hr. PR: A.B. in French, or consent.

292. Pro-Seminar in French Literature. 1-6 hr. Special topics.

SPANISH

Lower Division

1. Elementary Spanish. I, II. 3 hr.

2. Elementary Spanish. I, II. 3 hr. Continuation of Spanish 1.

3. Intermediate Spanish. I. 3 hr. Reading of modern Spanish prose.

4. Intermediate Spanish. II. 3 hr. Continuation of Spanish 3.

Upper Division

103. Elementary Conversation. I. 3 hr. PR: Spanish 3 and 4, or consent.

104. Elementary Conversation. II. 3 hr. PR: Spanish 103, or consent.

109. Grammar and Conversation. I. 3 hr. PR: 12 hr. of Spanish, or equiv.

110. Advanced Conversation. II. 3 hr. PR: Spanish 109, or equiv.

151. Spanish for Public Schools. I. 3 hr. PR: 12 hr. of upper-division Spanish, including Spanish 103, 104, and 109. An intensive study of conversational Spanish with emphasis on teaching methods in the elementary school.

152. Spanish for Public Schools. II. 3 hr. Continuation of Spanish 151.

211. Nineteenth Century Literature to 1870. I. 3 hr. PR: Spanish 3 and 4, and consent.

212. Spanish Literature Since 1870. II. 3 hr. PR: Spanish 3 and 4, and consent.

215. Lyric Poetry. I. 3 hr. PR: 12 hr. of Spanish, or equiv.

216. Spanish Civilization and Culture. I. 3 hr. PR: 12 hr. of Spanish, or equiv.

217. Spanish-American Literature and Culture. I. 3 hr. PR: Spanish 3 and 4, or equiv.

218. Spanish-American Literature and Culture. II. 3 hr. PR: Spanish 3 and 4, or equiv. Continuation of Spanish 217.

221. Literature of the Golden Age to 1635. I. 3 hr. PR: Spanish 3 and 4, and consent.

222. The Golden Age After Lope De Vega. II. 3 hr. PR: Spanish 3 and 4, and consent.

223. Estudios De Estilo. I. 3 hr. PR: 18 hr. of Spanish, or equiv.

224. Explicacion De Textos. II. 3 hr. PR: 18 hr. of Spanish, or equiv.

225. The Picaresque Novel. I. 3 hr. PR: 12 hr. of Spanish, or equiv.

227. Graduate Reading in Spanish. No credit. Special course to prepare Ph.D. candidates for the reading examination in Spanish.

241. Spanish Structural Linguistics. 4 hr. PR: 12 hr. of Spanish. Special course for the NDEA Language Institute.

242. Methods in Spanish Secondary Teaching. 4 hr. PR: 12 hr. of Spanish. Special course for the NDEA Language Institute.

291. Cervantes. II. 3 hr. PR: A.B. in Spanish, or consent.

292. Pro-Seminar in Spanish Literature. 1-6 hr. Special topics.

295. Sixteenth Century Literature. I. 3 hr.

297. Pro-Seminar in Spanish-American Studies. 1-6 hr. Special topics.

ITALIAN

Lower Division

1. Elementary Italian. I. 3 hr.

2. Elementary Italian. II. 3 hr. Continuation of Italian 1.

3. Intermediate Italian. I. 3 hr. Reading of modern Italian prose.

4. Intermediate Italian. II. 3 hr. Continuation of Italian 3.

GERMAN

Lower Division

1. Elementary German. I, II. 3 hr.

2. Elementary German. I, II. 3 hr.

3. Intermediate German. I. 3 hr. Reading of modern German prose.

4. Intermediate German. II. 3 hr. Continuation of German 3.

Upper Division

103. Spoken German. I. 3 hr. PR: German 3 and 4, or consent.

104. Spoken German. II. 3 hr. PR: German 103, or consent.

105. The German Novelle. I. 3 hr. PR: German 3 and 4, or consent. Representative stories of Keller, Meyer, Storm, and Stifter.

106. The German Novelle. II. 3 hr. PR: German 3 and 4, or consent. From Naturalism to present day. Continuation of German 105.

107. Nineteenth Century Drama. I. 3 hr. PR: Gernan 3 and 4, or consent. Critical study of selected dramas by Kleist, Grillparzer, Hebbel, and Ludwig.

108. Nineteenth Century Drama. II. 3 hr. PR: German 3 and 4, or consent. Continuation of German 107.

109. Advanced Grammar and Composition. I. 3 hr. PR: German 103 and 104, or consent. Intensive review of German grammar with extensive practice in German composition and translation into German.

110. Advanced Composition and Conversation. II. 3 hr. PR: German 109, or consent. Additional practice in composition, with all explanations and discussions conducted in German.

121. Scientific German. I. 3 hr. PR: German 1 and 2. Primarily for students in science courses.

122. Scientific German. II. 3 hr. Continuation of German 121.

136. Introduction to Goethe. II. 3 hr. PR: German 3 and 4, or consent.

161. Lyric Poetry. I. 3 hr. PR: German 3 and 4, or consent.

163. Modern German Prose in English Translation. I. 3 hr. Reading and discussion of outstanding German short stories and a few novels. (No credit allowed for departmental major nor for regular language requirements).

201. Independent Reading. I. 3 hr. Supervised reading for students who wish to do intensive work in any field of interest.

202. Independent Reading. II. 3 hr. Continuation of German 201.

227. Graduate Reading in German. No credit. Special course to prepare Ph.D. candidates for the reading examination in German.

242. Faust. II. 3 hr. Critical study of Goethe's *Faust*.

243. Medieval German Literature. I. 3 hr. PR: German 4, or consent.

244. German Literature of the Restoration and Renaissance. II. 3 hr. PR: German 4, or consent.

245. Classicism and Romanticism. I. 3 hr. PR: German 4, or consent. Critical study of German literature from 1750 to 1830.

246. The Liberal Age. II. 3 hr. PR: German 4, or consent. Critical study of German literature from 1830 to 1880, with an emphasis upon Poetic Realism.

247. The Age of Crisis. I. 3 hr. PR: German 4, or consent. Critical study of German literature from 1880 to the present.

265. German Civilization. I. 3 hr. PR: 12 hr. of German, or consent. General comprehensive survey of the most important aspects of German culture, including a brief historical background, the development of the German language, geography, science, music, art, architecture, literature, and philosophy.

275. The Modern Novel. I. 3 hr. PR: 18 hr. of German. Supervised reading of nineteenth century novels.

276. The Modern Novel. II. 3 hr. Continuation of German 275, with emphasis on recent fiction.

292. Pro-Seminar in German Literature. 1-6 hr. Special topics.

RUSSIAN

Lower Division

1. Elementary Russian. I. 3 hr.

2. Elementary Russian. II. 3 hr.

3. Intermediate Russian. I. 3 hr. Reading of modern Russian prose.

4. Intermediate Russian. II. 3 hr. Continuation of Russian 3.

Upper Division

103. Elementary Conversation. II. 3 hr. PR: Russian 3 and 4, or consent.

104. Elementary Conversation. I. 3 hr. PR: Russian 103, or consent.

144. Survey of Russian Literature. I. 3 hr. PR: Russian 3 and 4, or consent.

145. Survey of Russian Literature. II. 3 hr. Continuation of Russian 144.

211. The Russian Novel. I. 3 hr. PR: Russian 3 and 4, or consent.

212. The Russian Novel. II. 3 hr. Continuation of Russian 211.

LATIN

Lower Division

1. Elementary Latin. I. 3 hr.

2. Elementary Latin. II. 3 hr. Continuation of Latin 1.

3. Intermediate Latin. I. 3 hr. PR: Latin 1 and 2, or two years of high-school Latin. Selections from Caesar, Aulus Gellius, and Nepos, and from other authors of comparable difficulty, designed to prepare students to read orations of Cicero.

4. Cicero's Orations. II. 3 hr. PR: Latin 3, or two years of high-school Latin.

Upper Division

101. Classical Myths in the Modern World. I. 3 hr. This course, given entirely in English and assuming no knowledge of Greek or Latin, introduces the student to classical myths of gods and legends of heroes and their influence upon the modern world of thought and science.

102. Classical Culture and the Modern World. II. 3 hr. This course, given entirely in English, introduces the student to classical life and thought through a study of Greek and Roman daily life and customs, art, law, literature, science, and the influence of these upon present-day life and thought.

109. Selections from Roman Prose. I. 3 hr. PR: Latin 3 and 4, or equiv.

110. Selections from Roman Poetry. II. 3 hr. PR: Latin 4 and 109, or equiv.

111. Latin for Law Students. II. 3 hr. PR: Latin 3, or two years of high-school Latin. Selections from legal Latin and the Institutes of Justinian.

112. Roman Letterwriting. I. 3 hr. PR: Latin 4 and 109, or four years of high-school Latin.

121. Survey of Latin Literature. I. 3 hr. PR: Latin 109 and 110, or consent.

122. Survey of Latin Literature. II. 3 hr. PR: Latin 109 and 110, or consent.

201. The Story and Novel. I. 3 hr. PR: Latin 109, 110, or equiv. The origin of the story and novel is traced from Homer to the Medieval Greek and Latin romance writers. Selections from Petronius, the *Cena Trimalchionis*, and from Apuleius, *Cupid and Psyche*.

202. Drama. II. 3 hr. PR: Latin 109, 110, or equiv. A brief history of the origin and development of Greek and Roman drama. The *Menachmi* of Plautus, the *Andria* of Terrence, and the *Medea* of Seneca are read in Latin.

203. Oratory. II. 3 hr. PR: Latin 109, 110, or equiv. Survey of Greek and Roman oratory is given and part of the first book of Cicero's *De Oratore;* selections from Quintilian's *Institutes* and from Tacitus' *Dialogus de Oratoribus* are read in Latin.

227. Graduate Reading in Latin. No credit. Special course to prepare Ph.D. candidates for the reading examination in Latin.

231. Satire. II. 3 hr. PR: Latin 109, 110, or equiv. Greek satirical writings and the origin of the Roman satire. Selections in Latin from the *Satires* and *Epistles* of Horace, and from the *Satires* of Persius and Juvenal.

234. History. I. 3 hr. PR: Latin 109, 110, or equiv. Origin and development of Roman historiography and its Greek antecedents. Selections in Latin from Livy's *History*, from Tacitus' *Agricola*, and from Suetonius' *Julius Caesar*.

235. Epic. I. 3 hr. PR: Latin 109, 110, or equiv. Origin and development of the Greek and Roman epic. Selections from Vergil's *Aeneid*, from Lucretius' *De Rerum Natura*, and from the earlier and later epic poets in Latin.

236. Philosophy. II. 3 hr. PR: Latin 109, 110, or equiv. Origin and development of Greek philosophy and its influence upon Roman philosophy. Selections from Cicero's *Tusculan Disputations* on the immortality of the soul and from Seneca's *Epistles* in Latin.

292. Pro-Seminar in Latin Literature. 1-6 hr. Special topics.

GREEK

Lower Division

1. Elementary Greek. I. 3 hr.
2. Elementary Greek. II. 3 hr. Continuation of Greek 1.
3. Intermediate Greek. I. 3 hr.
4. Intermediate Greek. II. 3 hr. Continuation of Greek 3.

Upper Division

109. Selections from Medieval and Modern Greek Literature. I. 3 hr.

110. Selections from the Attic Orators. II. 3 hr.

121. Survey of Greek Literature. I. 3 hr. PR: Greek 109, 110, or consent.

122. Survey of Greek Literature. II. 3 hr. Continuation of Greek 121.

292. Pro-Seminar in Greek Literature. 1-6 hr. Special topics.

HEBREW

Lower Division

1. Elementary Hebrew. I. 3 hr.
2. Elementary Hebrew. II. 3 hr. Continuation of Hebrew 1.
3. Intermediate Hebrew. I. 3 hr. Reading of Hebrew prose.
4. Intermediate Hebrew. II. 3 hr. Continuation of Hebrew 3.

LINGUISTICS

Upper Division

111. Introduction to Structural Linguistics. I. 3 hr. Required for foreign language majors.

201. Linguistics as Applied to Spanish-American Dialects. I. 3 hr. PR: Consent.

211. Middle High German. I. 3 hr. PR: 12 hr. of German from upper division. Study of the linguistic developments of Middle High German from the eleventh to the fifteenth centuries with illustrative readings from the *Nibelungelied*.

212. Middle High German. II. 3 hr. Continuation of Linguistics 211 with illustrative readings from the Middle High German lyric poets and the courtly epics.

225. Comparative Grammar of Greek and Latin. I. 3 hr. PR: Consent.

226. Italic Dialects. II. 3 hr. PR: Consent.

227. Vulgar Latin. II. 3 hr. PR: Latin 12, 22, or equiv. Selections from Latin inscriptions and later Latin literature are studied to illustrate the development of the Latin language from its earliest times to its passing into the Romance languages.

231. *See* French 231.

241. *See* French 241 *and* Spanish 241.

251. History of the German Language. I. 3 hr. PR: 18 hr. of German, or consent. Historical development of standard German with emphasis on its relationships to the other German languages and dialects.

252. Comparative Germanic Linguistics. II. 3 hr. PR: Linguistics 251, or consent. A comparative study of Gothic, Old English, Old Norse, Old High German and Old Saxon.

255. History of the Spanish Language. I. 3 hr. PR: Consent. The development of Spanish and the transformation of the Castilian dialect into the national language of Spain. The course, given in Spanish, will include the cultural factors as well as a study of historical phonology, morphology, and syntax.

271. Old English. I. 3 hr. PR: Consent. Elementary study of Old West Saxon with illustrative materials from prose and poetry.

272. Old English. II. 3 hr. Continuation of Linguistics 271. Comparison of the Old English dialects, with extensive illustrative readings, especially in *Beowulf*.

281. Old Norse. I. 3 hr. PR: Consent. Elementary study of Old West Norse prose.

282. Old Norse. II. 3 hr. Continuation of Linguistics 281. Readings in various Old Icelandic sagas; introduction to Old Norse poetry.

285. Elementary Sanskrit. I. 3 hr. PR: Consent.

286. Elementary Sanskrit. II. 3 hr. Continuation of Linguistics 285.

290. Old French. II. 3 hr. PR: Consent.

292. Pro-Seminar in Linguistics. 1-6 hr. Special topics.

296. Old Spanish. II. 3 hr. PR: Consent.

LANGUAGE TEACHING METHODS

Upper Division

151. *See* French 151 *and* Spanish 151.

152. *See* French 152 *and* Spanish 152.

221. The Teaching of Foreign Languages. I. 3 hr. Required of all prospective elementary and secondary school teachers majoring in a foreign language.

222. The Teaching of Foreign Languages. II. 3 hr. Required of all candidates for a graduate degree in a foreign language.

242. *See* French 242 *and* Spanish 242.

270. Problems in the Teaching of French in the Elementary School. I. 3 hr. PR: Consent.

BIBLIOGRAPHY AND RESEARCH

Upper Division

265. Methods of Research. I. 3 hr. For students of French, German, or Spanish.

GEOLOGY AND GEOGRAPHY

Laboratory Fees

A non-refundable fee is required of all students who take the following laboratory courses in Geology:

Course	*Per Semester*	*Course*	*Per Semester*
Geol. 2	$2.00	Geol. 202	$2.00
Geol. 4	2.00		

Bachelor of Science in Geology

Students planning to seek employment in the petroleum industry should take Math. 116 and 117. A total of 132 hours is required, of which a minimum of 124 hours must be established in subjects exclusive of credits earned in required Physical Education, required Military or Air Science, English 0, and Math. 2.

FIRST YEAR				SECOND YEAR			
First Sem.	*Hr.*	*Second Sem.*	*Hr.*	*First Sem.*	*Hr.*	*Second Sem.*	*Hr.*
English 1	3	English 2	3	Chem. 1	4	C.E. 1	2
Foreign language	3	Foreign language	3	Foreign language	3	Chem. 2	4
Geol. 1	3	Geol. 3	3	Geol. 184	4	Foreign language	3
Geol. 2	1	Geol. 4	1	Math. 15	4	Geol. 185	4
Math. 3	3	Math. 4	3	Mil. or Air Sci. 3	2	Mil. or Air Sci. 4	2
Mil. or Air Sci. 1	2	Mil. or Air Sci. 2	2			Electives	3
Phys. Ed.	1	Phys. Ed. 2	1				
	16		16		17		18

SUMMER SESSION—BEFORE FOURTH YEAR

	Hr.
Geol. 266 (5 weeks)	6

THIRD YEAR				FOURTH YEAR			
First Sem.	*Hr.*	*Second Sem.*	*Hr.*	*First Sem.*	*Hr.*	*Second Sem.*	*Hr.*
Geol. 127	2	English 126	3	Geol. 221	3	Electives	17
Geol. 151	4	Geol. 231	4	Electives	14		
Geol. 270	3	Geol. 261	3				
Physic 1 (11)	4	Physics 2 (102)	4				
Electives	4-5	Electives	2-3				
	17-18		16-17		17		17

Bachelor of Arts in Geology

A minimum of 124 hours must be established in subjects exclusive of credit earned in required Physical Education, required Military Science or Air Science, English 0, and Math. 2.

FIRST YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
English 1	3	English 2	3
Foreign language	3	Foreign language	3
Geol. 1	3	Geol. 3	3
Geol. 2	1	Geol. 4	1
Math. 2 or 3	3	Math. 4	3
Mil. or Air Sci. 1	2	Mil. or Air Sci. 2	2
Phys. Ed. 1	1	Phys. Ed. 2	1
	16		16

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Chem. 1	4	Chem. 2	4
Foreign language	3	Foreign language	3
Geol. 184	4	Geog. 109	3
Mil. or Air Sci. 3	2	Mil. or Air Sci. 4	2
Electives	3-4	Electives	3-4
	16-17		15-16

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Art 115	3	Chem. elective	3
Geol. 151	4	Geol. 261	3
Physics 1	4	Physics 2	4
Electives	6	Electives	7-8
	17		17-18

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Geol. 127	2	English 126	3
Geol. 221	3	Geol. 231	4
Electives	12	Electives	10
	17		17

Courses of Instruction

Geology

Lower Division

1. Physical Geology. I, II. 3 hr. Description of composition and structure of earth; physical processes which change earth's surface. Accompanied by Geol. 2 to meet requirements for 4 hr. credit in a laboratory science in physical geology.

2. Physical Geology Laboratory. I, II. 1 hr. Accompanies Geol. 1.

3. Historical Geology. I, II. 3 hr. PR: Geol. 1. Evolution of earth and its inhabitants. Accompanied by Geol. 4 to meet requirements of 4 hr. credit in a laboratory science in historical geology.

4. Historical Geology Laboratory. I, II. 1 hr. Accompanies Geol. 3

5. Introduction to Geology. I, II. 3 hr. Designed especially for non-science majors. Composition and structure of earth and geologic processes which shape its surface. Accompanied by Geol. 2 to meet requirements for 4 hr. credit in a laboratory science in physical geology.

Upper Division

125. Geologic Drafting. I. 1 hr.

127. Map Interpretation. I. 2 hr. PR: Geol. 2, 4. Relation of earth structure and history to land forms as shown on topographic maps.

151. Structural Geology. I. 3-4 hr. PR: Geol. 1. Shape and position of rock masses in the earth's crust; mechanical principles underlying various types of rock deformation; indication of economic importance of deformed rock structures with respect to recovery of mineral products.

184. Mineralogy. I. 4 hr. PR: 1 year of geology. Elements of crystallography and systematic study of minerals except silicates. Identification of minerals by their physical properties supplemented by blow-pipe analysis.

185. Mineralogy and Petrography. II. 4 hr. PR: Geol. 184. Description, mode of occurrence, and classification of silicate minerals and rocks.

201. Physical Geology for Teachers. I, II, S. 3 hr. PR: High school teaching certificate, and consent. Composition and structure of earth and the geologic processes which shape its surface.

202. Physical Geology Laboratory for Teachers. I, II, S. 1 hr. Accompanies Geol. 201. Laboratory and field study of earth materials and features, and the topographic and geologic maps used to represent them.

218. Geology and the Earth Sciences. 4 hr. PR: Open only to members of N.S.F. Summer Institute. The physical nature of the earth. Rotation, revolution, shape and structure of the earth. Geologic forces changing the earth. Geologic history.

221. Geomorphology. I. 3 hr. Surface features of eastern United States.

222. Geomorphology. II. 3 hr. Surface features of western United States.

228. Photogeology. II. 3 hr. PR: Geol. 127, 151. Instruction in basic and advanced techniques of air photo interpretation.

231. Invertebrate Paleontology. II. 4 hr. PR: Geol. 3, 4. Invertebrate fossils; biologic classification, evolutionary development, and use in correlation of strata.

235. Introductory Paleobotany. I, II. 4 hr. PR: Geol. 3 and/or Bot. 2. Resume of development of principal plant groups through the ages, present distribution, mode of occurrence and index species, methods of collection.

261. Stratigraphy and Sedimentation. II. 3 hr. Study of sediments and sedimentary rocks. Field techniques stressed as data gathered and interpreted from rocks of Pennsylvanian age in Morgantown vicinity. Two-day field trip required.

263. Ground-water Hydrology. I. 3 hr. PR: Geol. 1 or consent. Study of the principles of ground-water hydrology; occurrence, development, uses, and conservation of ground-water.

266. Appalachian Geology Field Camp. S. 6 hr. PR: Geol. 231, 261. Practical experience in detailed geological field procedures and mapping. Living expenses in addition to tuition must be paid at time of registration.

269. X-Ray Diffraction. I, II. 2 hr. The theory of X-ray diffraction and application to the analysis of crystalline materials using the powder camera and X-ray diffractometer. Open to advanced students in geology, chemistry, engineering and related fields with consent of instructor.

270. Mineral Resources. I, S. 3 hr. PR: Geol. 1, 2. General survey of character, origin, and distribution of natural mineral resources, including mineral fuels, nonmetallic minerals, ore deposits, and ground-water.

272. Petroleum Geology. II. 3-4 hr. PR: Geol. 151. Origin, geologic distribution, methods of exploration and exploitation, uses and future reserves of petroleum and natural gas in the world.

285. Optical Mineralogy. I. 4 hr. PR: Geol. 185 and one year of Physics. Principles and practice in use of the petrographic microscope in identification of minerals. Emphasis on determination by immersion method.

290. Geologic Problems. I, II. 1-6 hr. Special problems for seniors and graduates.

291. Seminar. I. 1 hr.

294. Introductory Geochemistry. I. 3 hr. PR: Geol. 185 or consent. Evolution of earth as suggested by chemical and physical data, followed by topics of current interest, including geologic thermometry, oxidation potential and pH, and geochemical prospecting.

295. Geochemistry. II. 3 hr. PR: Geol. 185 or consent. Mineral systems at low temperatures and low pressures considered in terms of partial pressure, oxidation potential, and pH. Laboratory study includes directed investigation of a topic of interest to the student.

Geography

Lower Division

7. Introductory Geography. I, II. 3 hr. Study of earth's physical regions as modified and classified by man.

Upper Division

109. Economic Geography. I, II. 3 hr. Earth's land use patterns and interactions that result from man's economic activities.

116. Geography of Anglo-America. I. 3 hr. Regional characteristics and problems of development.

118. Geography of Western Europe. I. 3 hr. Regional characteristics and problems of development.

216. Urban Geography. II. 3 hr. Location, development and change of urban land use patterns.

219. Problems in Geography. I, II. 1-3 hr. per sem. PR: Consent.

HISTORY

History majors are required to complete 12 hours in lower-division history courses, and 18 hours in upper-division history courses. Courses in Group A are required of all majors at the lower-division level. Of the 18 hours in upper-division history courses at the 100 course level, the major should divide his course selections equally between Groups B and C below. With the approval of his adviser, he may elect options at higher course levels.

Group A: History 1, 2, 52, 53.
Group B: History 149, 150, 151, 152, 153, 154, 155, 156.
Group C: History 101, 102, 103, 104, 105, 106, 107, 108.

Curriculum for A.B. Degree With Major in History

FIRST YEAR				SECOND YEAR			
First Sem.	*Hr.*	*Second Sem.*	*Hr.*	*First Sem.*	*Hr.*	*Second Sem.*	*Hr.*
English 1	3	English 2	3	Lab. Sci.	4	English Lit.*	3
Foreign language	3	Foreign language	3	Foreign language	3	Foreign language	3
Lab. Sci.	4	Lab. Sci.	4	Hist. 52	3	Hist. 53	3
Hist. 1	3	Hist. 2	3	Econ. 51	3	Econ. 52	3
Mil. or Air Sci. 1	2	Mil. or Air Sci. 2	2	Pol. Sci. 1	3	Pol. Sci. 2	3
Phys. Ed.	1	Phys. Ed.	1	Mil. or Air Sci. 3	2	Mil. or Air Sci. 4	2
				Phys. Ed.	1	Phys. Ed.	1
	16		16		19		18

THIRD YEAR				FOURTH YEAR			
First Sem.	*Hr.*	*Second Sem.*	*Hr.*	*First Sem.*	*Hr.*	*Second Sem.*	*Hr.*
History	6	History	6	History	6	History	3-6
Minor	3	Minor	3	Minor	3-6	Minor or Electives	3-6
Electives	3-6	Electives	6-9	Electives	6-9	Electives	6-9
English Lit.*	3						
	15-18		15-18		15-18		15-18

*Teacher's Certification.

Courses of Instruction

*Lower Division**

1. Western Civilization from the Earliest Times to the Reformation. I, II. 3 hr.
2. Western Civilization from the Reformation to the Present. I, II. 3 hr.
52. Growth of the American Nation to 1865. I, II. 3 hr.
53. Making of Modern America, 1865 to the Present. I, II. 3 hr.

Upper Division

101. History of Ancient Times: Stone Age to the Fall of Rome. 3 hr.
102. Medieval Europe: Fall of Rome to the Renaissance. 3 hr.
103. Modern Europe, 1500-1763. 3 hr.
104. Modern Europe, 1763-1871. 3 hr.
105. Modern Europe, 1871 to Present. 3 hr.
106. British Civilization to 1660. 3 hr.
107. British Civilization Since 1660. 3 hr.
108. History of Asia. 3 hr.
149. The United States and Pennsylvania. 3 hr.
150. West Virginia. 3 hr.
151. The American Colonial and Revolutionary Experience. 3 hr.
152. The Early Republic, United States, 1781 to 1861. 3 hr.
153. The United States, 1865 to 1918. 3 hr.
154. Recent America, United States Since 1918. 3 hr.
155. Latin American History, Colonial Period and the Wars of Independence. 3 hr.
156. Latin America Since 1824. 3 hr.
202. Medieval Cultural History. 3 hr.
203. The Renaissance and the Reformation. 3 hr.
204. English Social History, 14th to 18th Century. 3 hr.
205. English Social History, 18th Century to the Present. 3 hr.
206. French Revolution and Napoleon. 3 hr.
207. History of Modern France. 3 hr.
208. History of Russia from Ancient Times to Alexander III. 3 hr.
209. History of Russia: The Revolutionary Era and the Soviet Period. 3 hr.
210. European Diplomatic History, 1815 to 1919. 3 hr.

*All first- and second-year courses are offered as lower-division "year-courses." These courses run through the year, but in no case is the first half-year a prerequisite for the second half. For example, History 1 is not a prerequisite for History 2. History 1 and 2 make up the introductory first year in history. History 52 and 53 are primarily for sophomores but are open to freshmen.

211. European Diplomatic History, 1919 to Present. 3 hr.

212. History of Germany from the Roman Era to the Early 19th Century. 3 hr.

213. History of Modern Germany. 3 hr.

214. Modern Spain. 3 hr.

215. Problems of the Pacific. 3 hr.

230. The ABC Powers of Latin America. 3 hr.

250. Economic and Social Development of West Virginia. 3 hr.

253. The American Frontier East of the Mississippi. 3 hr.

254. The American Frontier West of the Mississippi. 3 hr.

256. The Old South. 3 hr.

257. The American Civil War. 3 hr.

258. The New South. 3 hr.

259. The United States from McKinley to the New Deal, 1898 to 1933. 3 hr.

260. American Diplomacy to 1901. 3 hr.

261. American Foreign Policy and Diplomacy, 1901 to the Present. 3 hr.

269. Recent American History, 1933 to the Present. 3 hr.

279. American Economic History to 1865. 3 hr.

280. American Economic History Since 1865. 3 hr.

281. The American Labor Movement. 3 hr.

290. Intellectual and Social History of the United States to 1876. 3 hr.

291. Intellectual and Social History of the United States Since 1876. 3 hr.

292. European Intellectual History to the Age of Enlightenment. 3 hr.

293. European Intellectual History from the Age of Enlightenment to the Present. 3 hr.

HOME ECONOMICS

Laboratory Fees

A non-refundable fee is required of all students who take the following laboratory courses in Home Economics:

Course	*Per Semester*	*Course*	*Per Semester*
Food and Nutrition 15	$5.00	Food and Nutrition 205	$5.00
Food and Nutrition 115	10.00	Home Mgmt. and Fam. Econ. 120	5.00
		Home Mgmt. and Fam. Econ. 230	5.00

Purpose

The curriculum in the Division of Home Economics is designed to provide a professional education for persons expecting to work directly or indirectly with families in improving the quality of their living. Home economics' purpose is to assist individuals and families in developing satisfying relationships within the family and between the family and other community institutions. It contributes to the creation of a physical environment conducive to the development of human resources. Home economists work through existing economic and social organizations to encourage the improvement of goods and services used by consumers and to provide leadership in teaching people to consume to meet their changing needs.

Requirements for the Degree

Students have the choice of four options toward a degree in home economics, social science emphasis, physical science emphasis, art emphasis, or general. The degree granted is a bachelor of arts. Students may also pursue a bachelor of science degree with a major in home economics by fulfilling the requirements as set forth in the College of Agriculture, Forestry, and Home Economics section of this bulletin.

Total hours in Home Economics	36
Total hours outside Home Economics	80
Electives	12
GRAND TOTAL HOURS	128

REQUIRED COURSES

I. University Core

TOTAL	46 hr.

II. Home Economics Professional Core

1. Child Development and Family Relations 114	3 hr.
2. Clothing and Textiles 2 or 102	3 hr.
3. Food and Nutrition 1 or 135	3 hr.
4. Home Management and Family Econ. 210 or 230	3 hr.
5. Housing and Design 3	3 hr.
TOTAL	15 hr.

III. Options

a. Social Science emphasis

1. Additional courses in social science area	12 hr.
2. Additional courses in child development and family relations, home management, and family economics areas	14 hr.
3. Electives	41 hr.
TOTAL	67 hr.

b. Physical Science emphasis

1. Additional courses in physical sciences, work in at least two fields	12 hr.
a. Biology, bacteriology, zoology, genetics	
b. Chemistry	
c. Mathematics, statistics, physics	
2. Additional courses in foods and nutrition	15 hr.
3. Speech	3 hr.
4. Electives	37 hr.
TOTAL	67 hr.

c. Art emphasis

1. Additional courses in at least two of the following areas:	21 hr.
a. Accounting, marketing, journalism	
b. Art	
c. Psychology, sociology, history	
2. Additional courses in clothing and textiles and housing and design areas	15 hr.
3. Speech	3 hr.
4. Electives	28 hr.
TOTAL	67 hr.

d. General—Those wishing a Vocational Home Economics teaching certificate must have at least 8 hours in each area of home economics in addition to the general and professional education requirements. (See College of Education section for details)

1. One additional 3 hour course in each area plus 6 hours of electives in home economics	21 hr.
2. Electives	46 hr.
TOTAL	67 hr.

Suggested Home Economics Curriculum

FIRST YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
English 1	3	English 2	3
Phys. Ed.	1	Phys. Ed.	1
Foreign language	3	Foreign language	3
Univ. Core B	3	Univ. Core B	3
Univ. Core C	3	Univ. Core C	3
H.Ec. Core, FN 1, TC 2, or HD 3	3	H.Ec. Core, FN 1, TC 2, or HD 3	3
	16		16

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Phys. Ed.	1	Phys. Ed.	1
Core Group A (Foreign language)	3	Core Group A (Foreign language)	3
H.Ec.—(FN 15, TC 17, HD 23)	3	Univ. courses in H.Ec. Option	9
Univ. courses in H.Ec. Option	6	Univ. Core B or C	3
Univ. Core B or C	3		
	16		16

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
H.Ec. (100 level courses)	6	H.Ec. (100 level courses)	6
H.Ec. Core (TC 102, CDRF 114, FN 135)	3	H.Ec. Core (TC 102, CDRF 114, FN 135)	3
Univ. courses in H.Ec. Option	3	Univ. courses in H.Ec. Option	3
Univ. Core A*	3	Univ. Core B or C	3
Electives	1-3	Electives	1-3
	16-18		16-18

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Univ. Core B or C	3	H.Ec.	6
H.Ec. Core (HMFE 210 or 230)	3	Electives**	10-12
Electives**	10-12		
	16-18		16-18

*If two years of foreign language were taken.
**To be chosen in consultation with adviser to fit the student's professional goals.

Careers

Home economists find professional opportunities in education, business, and public service. They may work directly with families; specific age groups such as children, youth or aged; or individual consumers; and indirectly through educational programs in various communication media (radio, television, journalism). Home economists are employed as teachers, nursery school supervisors, extension workers, 4H Club agents, YWCA workers, dietitians, home service representatives, radio and television programmers, interior designers, fashion coordinators, and buyers. Increasingly their competencies are being sought by international agencies such as the Peace Corps and other cultural and educational exchange programs.

Courses of Instruction

Food and Nutrition

FN

1. Elementary Nutrition. I, II. 3 hr. Essentials of adequate diet; applications are made with particular reference to needs of college students.

15. Food Selection and Preparation. I, II. 3 hr. PR: 8 hr. of a laboratory science. (2 lec., 1 lab.). Basic principles of food selection, care, and preparation. Emphasis on the chemical and physical properties of foods and reactions which occur during processing.

108. Quantity Cookery. II. 3 hr. PR: FN 115. (1 lec., two 3-hr. labs. arranged). Application of principles to preparation of food in large quantities. Use of standardized formulae, calculation of costs, and use of institution equipment. Field trip included. Offered alternate odd years.

115. Meal Planning, Preparation, and Service. I, II. 3 hr. PR: FN 15 or consent. (1 lec., 3-hr. lab.). Selection and purchase of foods; planning, preparing, and serving meals with emphasis on time, energy, and money management.

121. Nutrition and the Family. II. 3 hr. PR: FN 1 or consent. Family-centered approach to nutrition, emphasizing the different needs of its members. Opportunity to explore nutritional problems and their solutions through contacts in the community.

128. Institutional Buying. I. 2 hr. PR: FN 108. Producing areas, distribution of food products, specifications, storage, and food practices in quantity buying. Observation in local wholesale markets, warehouses, and storage units. Offered in alternate odd years. Tour of market facilities in Pittsburgh area required.

135. Food and People. II. 3 hr. The cultural, social, ethnic, and economic problems involved in feeding families.

138. Institutional Organization and Management. II. 3 hr. PR: FN 108. Principles of organization and management of food service. Field trip included. Offered alternate even years.

148. Laboratory Practice in Institution Management. I, II. 2 hr. PR: FN 138 and consent. Experience under supervision in planning, preparing, and serving food in an institution. Selection of place and type of experience to be determined by needs of students.

201. Diet Therapy. II. 3 hr. PR: FN 101, Zool. 271. Adaptations of normal diet for diseases whose prevention or treatment is largely influenced by diet. Offered in alternate odd years.

205. Experimental Cookery. II. 3 hr. PR: FN 15, Chem. 131, (1 hr. lec., 2 2-hr. labs.). Utensils, ingredients, temperature, manipulation, and cooking methods as they affect quality of cooked products. Offered in alternate odd years.

211. Readings in Nutrition. II, S. 1-4 hr. PR: FN 241 or consent. Review of current literature and of present research. Topics depend upon needs and interest of class members.

221. Community Nutrition Problems. I. 2 hr. PR: Consent. (2 hr. lec., field work.) Includes consideration of organizations and agencies through which these problems may be solved.

241. Nutrition. I. 3 hr. PR: One course in Nutrition, Biochemistry, and Physiology. The role of food nutrients in the physiological and biochemical processes of the body; nutritional needs of healthy individuals under ordinary conditions and in periods of physiologic stress. Offered alternate even years.

281. Problems in Nutrition and/or Diet Therapy. 1-4 hr. PR: Consent.

285. Problems in Foods. 1-4 hr. PR: Consent.

288. Problems in Institutional Management. 1-4 hr. PR: Consent.

Textiles and Clothing

TC

2. Principles of Clothing Construction. I, II. 3 hr. (Three 2-hr. periods per week). Basic principles of clothing construction including pattern alteration and fitting. Placement tests will be given for sectioning.

17. Textiles. I, II. 3 hr. (2 lec., 1 lab.) Textile fibers and fabrics studied with view to their use in dress and in the home. Characteristics of the major fibers and their suitability to various uses. Study of standard and novelty materials with emphasis on appropriate use and care.

102. Clothing for the Family. I. 3 hr. (3 lectures). Clothing for the family in relation to the social, psychological, and economic factors, including a study of the clothing industry, trends, and cultural significance. Field trip included.

212. Advanced Clothing Construction. II. 2 hr. PR: TC 232 or consent. Offers opportunity for creative expression and for understanding of pattern design through handling of fabrics on dress form. Costumes are designed, draped, and constructed.

217. Textiles for Consumers. I. 3 hr. PR: TC 17. Acquaints students with the regulations, marketing channels, information sources, and new developments relevant to the selection of fabrics for household uses and wearing apparel. Discussion of current literature as it relates to buying fabrics for use in clothing and home furnishing.

222. Tailoring. II. 3 hr. PR: TC 2, 17. Tailoring of suits and coats. Emphasis placed on professional techniques, advanced fitting, and construction of garments. Second garment constructed by fast method techniques.

232. Costume Design. I. 2 hr. PR: TC 2, 17. Techniques of figure and fashion drawing. Designing for individuals of various types and ages. Some history of costume included.

282. Problems in Clothing. 1-4 hr. PR: Consent.

287. Problems in Textiles. 1-4 hr. PR: Consent.

Housing and Design

HD

3. Introduction to Related Art. I, II. 3 hr. The use of the design elements and the application of the design principles to stimulate imagination and creative ability and to develop discriminating judgment in selection and arrangement of materials used for the individual and the home.

23. Housing Design. I, II. 3 hr. PR: HD 3 or consent. Housing and home planning as they relate to family living. Selection, arrangement, and use of the interior and exterior space for activities carried on, in, and around the home.

123. Interior Design. I. 3 hr. PR: HD 23 or consent. (2 lec., 1 lab.) The practical and aesthetic aspects of coordinating the furnishings, background, accessories, lighting, and space of a house for family living.

223. Advanced Interior Design. II. 3 hr. PR: 23, 123 or consent. Technical and design information necessary to comprehend and function within the contemporary home furnishings market.

283. Problems in Housing and/or Design. 1-4 hr. PR: Consent.

Child Development and Family Relations

CDFR

106. Child Development. I, II. 3 hr. PR: Psych. 1 or 3, or Ed. 105 or consent. (2 lec. and 1 2-hr. lab. arranged.) Principles of development during childhood including physical, psychological, and social factors affecting behavior. Observation and participation in the University Nursery School.

114. Family Relations. I, II. 3 hr. Introductory course in the study of marriage and the family. Attention is placed particularly on mate selection, the interplay of social roles in family relations, and problems of decision-making and adjustment arising out of the demands of the contemporary social setting.

126. Infant Development. I. 2 hr. (1 lec., 1 lab.) Development characteristics and problems during the prenatal period and the first eighteen months with implications for guidance and care.

224. Family and the Individual in the Community. I. 3 hr. PR: One course in the family, or sociology, or consent. Social psychological analysis of the individual in the family and in other social systems. Involves the study of role relationships, community processes and attitudes and values as they affect the behavior of the individual.

264. Family Development. I, II. 3 hr. PR: CDFR 114 or consent. A professional course designed to prepare students for work with families in their varying stages of development and different socio-economic levels. Involves intensive study of family relationships as affected by differing stages of the family life cycle, from beginning family through the aging couple. Lecture, discussion, and observation of families.

266. Needs of Adolescents. I, II. 3 hr. Adolescent needs as met by the home with contributions of other agencies such as church, school, and youth groups. Physical, social and integrative needs will be considered from the standpoint of needs of all family members as well as the individual.

276. Seminar in Child Development. II. 2 hr. PR: Senior standing and consent. Review and discussion of recent literature pertaining to child development. Offered in alternate years.

284. Problems in Family Relations. 1-4 hr. PR: Consent.

286. Problems in Child Development. 1-4 hr. PR: Consent.

Home Management and Family Economics

HMFE

120. Communication of Consumer Information. I, II. 2 hr. PR: Minimum of 4 hr. in each of four areas of home economics, or consent. Techniques of communicating ideas and information relative to goods and services available to the consumer. Emphasis upon demonstration technique.

210. Family Economics. I, II. 3 hr. PR: Senior or graduate standing. Management of the family's money resources. Consideration of the economic problems of families, of planned spending and saving, and of the role of the consumer.

230. Home Management, Principles and Application. I, II. PR: Upper-division standing. Study and application of management in a variety of situations faced by the family with opportunity to integrate knowledge from other courses.

250. Household Equipment. I, II. 2 hr. Selection, arrangement, use and care of equipment for various situations and for different income levels. Lecture, laboratory, and discussion.

280. Problems in Home Management and/or Family Economics. 1-4 hr. PR: Consent.

Home Economics Education

Ed. 262. Vocational Home Economics in Secondary Schools. II. 3 hr. PR or parallel: Ed. 120, 124, 163; 25 hr. in Home Economics.

HEEd.

209. Evaluation in Home Economics. II. 3 hr. PR: 30 hr. of home economics, 7 hr. of Education. Experience in selecting, devising, and using evaluation devices for appraising student progress toward desired goals in home economics. Offered alternate odd years.

219. Adult Education in Homemaking. I. 3 hr. PR: 30 hr. of home economics, and 7 hr. of Education. Current trends and present activities. Organization of adult classes; development of unit outlines; consideration of teaching methods; illustrative material and bibliography. Offered alternate even years.

279. Seminar in Home Economics Education. II, S. 3 hr. PR: Senior standing and 6 hr. of Education. Review and discussion of recent literature pertaining to home economics at the junior and senior high school levels and the college and adult levels based on the history of the home economics movement from the Lake Placid Conference in 1909 to the present time.

Honors Program

100. Home Economics Honors Program. 3 hr. PR: Second-semester junior standing; at least two academic years in residence at West Virginia University; overall grade-point average of 3.0 or better; grade-point average in home economics courses of 3.20 or better. Individual special problems for undergraduates of second-semester junior standing who show special ability and interest in one of the following fields: child development, home economics education, or nutrition. Admission dependent only upon the recommendation of the adviser and the Honors Course Committee. Hours arranged.

110. Home Economics Honors Program. 3 hr. PR: First-semester senior standing; overall grade-point average of 3.0 or better; grade-point average in home economics courses of 3.25 or better, and Home Econ. 100. Individual special problems for undergraduates of first-semester senior standing who show special ability and interest in one of the following fields: child development, home economics education, or nutrition. Admission only upon the recommendation of the adviser and the Honors Course Committee. Hours arranged.

120. Home Economics Honors Program. 3 hr. PR: Second-semester senior standing; overall grade-point average of 3.0 or better; grade-point average in home economics courses of 3.25 or better; Home Econ. 110. Individual special problems for undergraduates of second-semester senior standing who show special ability and interest in one of the following fields: child development, home economics education, or nutrition. Admission only upon the recommendation of the adviser and the Honors Course Committee. Hours arranged.

THE HUMANITIES

1, 2. Introductory General Course. I, II. 3 hr. per sem. This course takes cross sections of Western Civilization at its most significant points. Within an historical framework, it treats of the principal developments and landmarks of literature, philosophy, art, architecture, and music from pre-Greco-Roman times up to now, comparing the past with the present and interrelating the various aspects of our civilization. Optional discussion periods allow students the opportunity to meet privately or in small groups for consultation with leaders. A special syllabus helps tie together the material of the course.

141. Great Books. (First Course). I. 3 hr. This course considers five literary masterpieces in translation: Plato's *Republic,* Sophocles' *Oedipus Rex* and *Antigone,* Dante's *Divine Comedy,* Cervantes' *Don Quixote,* and Goethe's *Faust.* Taken separately and in order, they represent the Greek world, the Middle Ages, the Renaissance, and the Modern period. Taken as a group, they illustrate the persistent conflict between the actual and the ideal in the literature of Western Civilization.

142. Great Books. (Second Course). II. 3 hr. This course considers five literary masterpieces, of which four are in translation: Marcus Aurelius' *Meditations,* Benvenuto Cellini's *Memoirs,* Montaigne's *Essays,* Rousseau's *Confessions,* and *The Education of Henry Adams.* These personal evaluations of the problems of life, ranging from the Roman Empire to modern America, constitute the integrating principle of the course.

143. Great Books. (Third Course). I. 3 hr. This course considers selected masterpieces of scientific writing, including Lucretius' *On the Nature of Things,* Francis Bacon's *Novum Organum,* Descartes' *Discourse on Method,* Charles Darwin's *Origin of Species,* Freud's *The Interpretation of Dreams,* and Whitehead's *Science and the Modern World.* Taken as a group, these works provide a survey from the ancient world to the present day of the impact of science in the realm of the humanities.

144. Great Books. (Fourth Course). II. 3 hr. This course considers a group of great and provocative creations of societies, ideal or not so ideal, starting with Sir Thomas More's *Utopia* and including Bacon's *The New Atlantis,* Butler's *Erewhon,* Bellamy's *Looking Backward,* B. F. Skinner's *Walden Two,* Huxley's *Brave New World,* and Orwell's *1984.* Taken as a group, these works provide a record of modern man's hopes and fears in his attempt to adjust to a world of rapid technological and social change.

181, 182. American Civilization. I, II. 3 hr. per sem. This course acquaints the student with the salient characteristics of American Civilization as they have developed since the planting of European colonies on this continent. Emphasis is placed on the unique contributions of successive arrivals on American shores to the making of the distinctive American culture, as evidenced in its folkways, arts, and philosophy. The central theme of the course is the manifestation of the democratic spirit in the thought and feelings of the American people.

250. Culture Tour of Europe. S. 6 hr. PR: Some cultural background in European civilization such as Humanities 1 and 2, History 1 and 2, art survey courses, or equiv., or consent.

260. Culture Tour of Latin America. S. 6 hr. PR: Some cultural or historical background in Latin America, such as history or art courses, or consent.

270. Cradle of History Tour of the Near East. S. 6 hr. PR: Humanities 1 and 2, History 1 and 2, or equiv., or consent.

280. Around-the-World Culture Tour. S. 6 hr. PR: A course in world or western civilization, such as Humanities 1 and 2, Hist. 1 and 2, or consent.

LIBRARY SCIENCE

Courses in undergraduate library science are designed to meet the needs of students preparing to qualify for State certification as teacher-librarians in public schools, students who desire a general program of library science, and students who are interested in preparing for graduate study in librarianship. A student planning to serve as a school librarian must complete the minimum number of hours of Education courses required for certification. Students wishing to enter other fields of library science should plan their programs to include appropriate courses.

Certain courses, such as "Using Books and Libraries," will be valuable to any University student. "Library Materials For Children" and "Book Selection For Secondary School Libraries" will be helpful to prospective teachers.

The Department of Library Science and the College of Education cooperate in offering graduate training in school librarianship. The degree of Master of Arts in Education is awarded to those successfully completing the program. For entrance requirements and courses of study consult the 1965-66 Graduate School *Announcements.*

Curriculum for A.B. Degree With Major in Library Science

FIRST YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
English 1	3	English 2	3
Foreign language	3	Foreign language	3
Laboratory Sci.	4	Laboratory Sci.	4
Lib. Sci. 1	3	Electives	2-5
Electives	2	Phys. Ed.	1
Phys. Ed.	1	Mil. or Air Sci. 2	3
Mil. or Air Sci. 1	2		
	18		15-18

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
English 3	3	English 4	3
Foreign language	3	Foreign language	3
Soc. Sci. or Pol. Sci.	4	Soc. Sci. or Pol. Sci.	4
Lib. Sci. 101	3	Electives	5
Electives	2	Phys. Ed.	1
Phys. Ed.	1	Mil. or Air Sci. 4	2
Mil. or Air Sci. 3	2		
	16-18		16-18

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Lib. Sci. 223	3	Lib. Sci. 224	3
Humanities 141 Great Books I	3	Humanities 142 Great Books II	3
Electives	12	Electives	15
	14-18		14-18

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Lib. Sci. 222	3	Lib. Sci. 227	3
Lib. Sci. 226	3	Electives	15
Electives	12		
	18		18

Courses of Instruction

1. Using Books and Libraries. I, II. 3 hr. Planned to give working knowledge of library facilities, particularly of the University Library. General reference sources, basic principles of cataloging, and departments of the library are studied. A course that is useful to any student in the University; required for library science majors.

101. Reference and Bibliography. I, II. 3 hr. PR: Lib. Sci. 1 or consent. Basic reference books, dictionaries, encyclopedia, indexes, yearbooks, and other reference materials are studied and evaluated, with emphasis on the theory and practical experience of reference work.

203. Library Materials for Children. I, II, S. 3 hr. Survey of the development of children's literature with emphasis on modern books. Evaluation of the aids and standards for selection of books and materials in this field. Investigation of children's reading interests and practice in storytelling are included. Discussions, reports and special projects.

205. Book Selection for Secondary School Libraries. I, S. 3 hr. Survey of adolescent literature and other library materials adapted to the needs of high school students. Critical evaluation of standard, classic and current books together with aid and criteria for selection. Reading interests and the problem of the retarded and nonreader will be considered.

207. School Library Organization and Administration. I, S. 3 hr. The organization and administration of school libraries including planning of rooms, equipment, routines and schedules. Attention is given to special phases of the work such as publicity and displays, reading, guidance, handling of audio-visual materials and the work of student assistants. Lectures, readings, discussions and special problems. Designed to meet the needs of the librarian and teacher-librarian.

221. Public and Regional Library Service. S. 3 hr. PR: Consent. Principles governing the administration of tax-supported public libraries and the development of larger units of service. Objectives, functions, control, finances, building and equipment, personnel, special services.

222. Field Practice. I, S. 3 hr. Designed to promote an understanding of total library programs and the interrelations of library methods and skills found in the different libraries. Offered after basic courses have been completed.

223. Cataloging and Classification. I, S. 3 hr. Basic principles of cataloging and classification combined with practical experience in processing the various types of books and materials. Problems peculiar to the teacher-librarian will be considered.

224. History of Books and Libraries. II, S. 3 hr. A survey course, including the development of the book from early manuscript form, history of printing, printers, book illustration, bindings, and the library and its development.

225. Books and Reading for Adults. II, S. 3 hr. Reading and evaluation of representative books in broad subject fields. Stress on both modern titles and the classics for the adult reader. Emphasis on book reviewing, both written and oral, with a study of book selection aids. Class discussions, problems, term reports.

226. Literature of the Social Sciences. I, S. 3 hr. PR: Consent. An approach to the selection and use of books and materials in the social sciences.

227. Literature of the Humanities. II, S. 3 hr. Bibliographical and other reference sources in the major subject areas of the humanities, including religion, philosophy, fine arts, music, and literature.

228. Literature of Science and Technology. II, S. 3 hr. PR: Consent. Designed to give the student a good working knowledge of the increasingly complex literature of science and technology.

230. Library Resources for the School Curriculum. II. 3 hr. Broadened experiences in both library and outside resources that lend themselves to curriculum enrichment, including guidance, remedial reading, text books, community resources, all phases of audio-visuals, etc. Presented to elementary and secondary teachers as well as librarians to help them give more effective service.

235. Library in the Elementary School. II. 3 hr. PR: Lib. Sci. 203. Organization and administration of library service for children in the elementary school including consideration of housing equipment, selection and organization of books and other materials, instruction in the use of the library, student assistants, audio-visual materials, and publicity.

MATHEMATICS AND ASTRONOMY

A student must have a grade-point average of 2.0 or higher in mathematics courses taken in the lower division before he will be admitted to the upper division as a mathematics major.

Lower-division students who plan to become majors in the Department, who also wish to meet the requirements for teacher certification, should so inform their lower-division adviser, and plan their schedules very carefully in order to avoid loss of time.

The foreign language should be French, German, or Russian.

Mathematics majors must complete 18 hours of mathematics beyond calculus. The usual courses are taken from among Math. 235, 236, 237, 240, 243, 251, and 252.

Suggested Mathematics Program

FIRST YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
English 1	3	English 2	3
Foreign language	3	Foreign language	3
Math. 3	3	Math. 15	4
Math. 4	3	Mil. or Air Sci. 2	2
Mil. or Air Sci. 1	2	Phys. Ed.	1
Phys. Ed.	1	Distribution requirements	3-6
Distribution requirements	3-6		
	16-18†		16-17

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Foreign language	3	Foreign language	3
Math. 116	4	Math. 117	4
Physics 111	5	Physics 112	5
Mil. or Air Sci. 3	2	Mil. or Air Sci. 4	2
Phys. Ed.	1	Phys. Ed.	1
Distribution requirements	3-6	Distribution requirements	3-6
	17-18		17-18

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Math. 240	3	Math. 235	3
Math. 236	3	Math. 243	3
Distribution requirements	0-3	Distribution requirements	0-3
Minor and electives	9	Minor and electives	9
	18		18

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Math. 251	3	Math. 252	3
Minor and electives	15	Minor and electives	15
	18		18

†Men required to take both military science or air science and physical education should postpone taking science until the second or third semester. A distribution requirement may then be taken in the Freshman year.

Courses of Instruction

MATHEMATICS

The following two courses are offered to enable students to remove entrance conditions in mathematics. Each course meets three times per week throughout the school year. Neither course carries University credit, although each is considered equivalent to three hours per semester in calculating student course loads.

Self-instruction programmed course materials in Mathematics 0, 1, and 7 are available on a rental basis.

Pre-College

0. Elementary Algebra. I and II. ½ unit per sem. A two-semester course equivalent to first-year high school algebra.

1. Geometry. I and II. ½ unit per sem. A two-semester integrated course covering the usual material of high school plane and solid geometry.

Lower Division

2. Algebra. I, II. 3 hr. PR: 1 unit of algebra.

3. College Algebra. I, II. 3 hr. PR: 1½ units of algebra and a satisfactory performance on the American College Test or Math. 2, and 1 unit of geometry.

4. Plane Trigonometry. I, II. 3 hr. PR: 1½ units of algebra and a satisfactory performance on the American College Test or Math. 2, and 1 unit of geometry.

6. Arithmetic for Elementary Teachers. I, II. 3 hr.

7. Solid Geometry. II. ½ unit. PR: Plane geometry.

8. Elementary Mathematics. II. 3 hr. PR: 1 unit of algebra. For students planning to teach Commerce.

15. Calculus I. I, II. 4 hr. PR: 2 units of algebra, ½ unit trigonometry, and successful completion of placement test, or Math. 3 and 4. Introduction to the calculus with analytic geometry.

21, 22. Introduction to Mathematics. I, II. 3 hr. per sem. PR: 1 unit of algebra. Reasoning, development of elementary mathematics, function and limit concepts, topics in modern mathematics, the nature of mathematics and its relation to modern civilization.

Upper Division

106. Mathematical Logic 1. I. 3 hr. PR: Philos. 4 or consent. A study of the logic of statements, predicates, and identity (equivalent of Philos. 106).

110. Digital Computer Programming. I, II. 1 hr. PR: Math. 3. Preparation and execution of Fortran computer programs.

116. Calculus II. I, II. 4 hr. PR: Math. 15. Completion of plane analytic geometry as needed for geometric applications of the calculus; techniques of integration; and further interpretations of the definite integral.

117. Calculus III. I, II. 4 hr. PR: Math. 116. Infinite Series, solid analytic geometry, calculus of two or more variables, and short introduction to differential equations.

201, 202. Combinatorial Analysis. I, II. 3 hr. per sem. PR: One year of calculus. Permutations, combinations, generating functions, principle of inclusion and exclusion, permutations, distributions, partitions, compositions, trees, and networks.

206. Mathematical Logic 2. I or II. 3 hr. PR: Math. 106. Formalization of the material in the previous term, the concepts of consistency, decidability, and completeness (equivalent to Philos. 206).

220, 221. Numerical Analysis. I, II. 3 hr. per sem. PR: Math. 117 and pre- or corequisite Math. 110 or I.E. 180, or consent. The composition, propagation and generation of error. The discrete finite difference calculus. Polynomial approximation including interpolation, numerical differentiation and integration, numerical solution of differential equations, least squares, Chebyshev polynomials. Non-polynomial approximation. Numerical solution of equations and systems of equations. Eigenvalue problems, Random numbers, and Monte Carlo Methods.

225. Theory of Games. II. 3 hr. PR: Math. 117 or consent. Elements of Matrix Algebra and Probability. Theory of Games, including decision theory, linear and dynamic programming, and strategy.

230, 231. Theory of Numbers. I, II. 3 hr. per sem. PR: One yr. of calculus. Introduction to classical number theory, covering such topics as divisibility, the Euclidean algorithm, Diophantine equations, congruences, primitive roots, quadratic residues, number-theoretic functions, distribution of primes, irrationals, and combinatorial methods. Special numbers, such as those of Bernoulli, Euler, and Stirling.

232. Mathematical Statistics. II. 3 hr. PR: Math. 117. Discrete and continuous variables; correlation, regression, sampling theory, normal, chi-square, t, and F distributions; signifance tests; analysis of variance.

235. Introduction to Analysis and Topology. I, II. 3 hr. PR: Math. 117 or consent. A study of sets, relations, functions; cardinal numbers, and orderings. Topological spaces including continuity, convergence, separation, compactness, and connectedness.

236. Introduction to Algebraic Structures. I, II. 3 hr. PR: Math. 117 or consent. Basic study of groups, rings, integral domains, fields, and polynomial rings. Special consideration of the real and complex fields and related topics.

237. Introduction to Linear Algebra. II. 3 hr. PR: Math. 117 or consent. A study of vector spaces, matrices, determinants, linear transformations, linear programming, bilinear and quadratic forms, and related topics.

238. Modern Geometry for Teachers. II. 3 hr. PR: Math. 117 or consent. For high school teachers. Foundations of geometry. Special topics from Euclidean projective, and non-Euclidean geometries.

240. Differential Equations. I, II. 3 hr. PR: Math. 117. First course. Types of ordinary differential equations of first or higher degree and of first or higher order. Solutions and applications. Not open to students with credit for Math. 253.

242. Advanced Real Calculus. I. 3 hr. PR: Math. 117. Preparatory course for Math. 256. Fundamental principles of limits, derivatives, integrals and series.

243. Projective Geometry. II. 3 hr. PR: Math. 236. Projective, affine, and metric geometries of the line, plane, and space; conics and quadrics.

245. Vector Analysis. I. 3 hr. PR: Math. 240 or 253. Vector definitions and operations, differentiation, operator del, integration, generalized coordinates, irrotational and solenoidal vectors, electrostatic fields, potentials.

248. History of Mathematics. II. 3 hr. PR: Math. 15. Survey of the development of mathematics through the calculus, with emphasis on the mathematical theories and techniques of each period and their historical evolution.

251, 252. Advanced Calculus. I, II. 3 hr. per sem. PR: Math. 235 or consent. A study of sequences, limits, continuity, definite integral, convergence, differentiation, differentials, functional dependence, multiple integrals, line and surface integrals, and differential forms.

253. Advanced Course in Applied Mathematics. I. 3 hr. PR: Math. 117. Determinants and matrices; ordinary differential equations of the first order, linear differential equations with constant coefficients, simultaneous linear differential equations, applications; mechanical and electrical circuits; Fourier series and integrals.

254. Advanced Course in Applied Mathematics. II. 3 hr. PR: Math. 253. Finite differences; partial differential equations, Bessel functions and Legendre polynomials; vector analysis.

256. Introduction to Complex Variables. II. 3 hr. PR: Math. 242 or 252. Introductory course primarily for students in engineering and physics. Elementary principles, conformal mapping, and applications.

259. Introduction to the Laplace Transform. II. 3 hr. PR: Math. 240 or 253. Introduction at the undergraduate level to the theory and applications of the Laplace transform.

261, 262. Special Topics. S. 2-4 hr. PR: Math. 117 or consent. Primarily for secondary school teachers. Topics in modern mathematics. Content may vary with the needs of the student.

263. Special Topics. II. 2-3 hr. PR: Math. 262 or consent. Sets and relations; axiomatization of a mathematical system; algebraic structure; real number system; and critical study of the foundations of Euclidean geometry.

264, 265. Foundations of Algebra. S. 2 hr. PR: Differential and integral calculus, or consent. Not open to students with credit for Math. 236. Introduction to algebraic structures: rings, the integral domain of integers, properties of the integers, fields, polynomials over a field, groups; matrices; linear systems; vector spaces; vector geometry; linear transformations; and linear programming.

266, 267. Foundations of Geometry. S. 2 hr. PR: Differential and integral calculus, or consent. A study of affine, projective, Euclidean, and non-Euclidean geometries.

268, 269. Probability and Statistics. S. 2 hr. PR: Differential and integral calculus or consent. Finite sample space, measure of the set of outcomes and probability of events, independent trials, functions on the sample space, approximations to the binomial distribution, elementary statistical inference, continuous sample spaces, limit theorems, stochastic processes, statistical models and applications.

270, 271. Introduction to Mathematics for the Elementary Teacher. I, II. 3 hr. per sem. PR: Math. 6 or consent. Systems of numeration; sets, relations, binary operations, decimal and other base systems; natural numbers, integers, rational numbers, and real numbers with emphasis on the algebraic structure of each; the notions of length, area and volume; pythagorean theorem; and coordinate geometry.

ASTRONOMY

Upper Division

106. Descriptive Astronomy. II. 3 hr.

216. Astronomy for Teachers. S. 3 hr. Introduction to astronomy with special emphasis on the needs of physical science teachers and science club directors. Not open to students with credit for Astron. 106.

255. Mathematical Astronomy. II. 3 hr. PR: Astron. 106, Math. 240. Development of the implications of Kepler's Laws and Newton's Law of Gravitation.

PHILOSOPHY

Philosophy seeks to discover the defensible foundations of belief and action.

Program for Philosophy Majors

FIRST YEAR				SECOND YEAR			
First Sem.	*Hr.*	*Second Sem.*	*Hr.*	*First Sem.*	*Hr.*	*Second Sem.*	*Hr.*
Philos. 4	3	Art, Lib. Sci., or Speech	3	Hist. 1	3	Hist. 2	3
English 1	3	English 2	3	Philos. 106	3	Philos. 112	3
Foreign language	3	Foreign language	3	Foreign language	3	Foreign language	3
Mathematics	3	Mathematics	3	Econ., Pol. Sci. or Soc. Sci.	3-4	Econ., Pol. Sci. or Soc. Sci.	3-4
Phys. Ed.	1	Phys. Ed.	1	Laboratory Sci.	4	Laboratory Sci.	4
Mil. or Air Sci. 1	2	Mil. or Air Sci. 2	2	Mil. or Air Sci. 3	2	Mil. or Air Sci. 4	2
				Phys. Ed. (W)	1	Phys. Ed. (W)	1
	15		15		17-19		17-19

THIRD YEAR				FOURTH YEAR			
First Sem.	*Hr.*	*Second Sem.*	*Hr.*	*First Sem.*	*Hr.*	*Second Sem.*	*Hr.*
Psych. 1	3	Minor Subject	3	Philosophy Electives	6	Philosophy Electives	6
Philosophy Elective	3	Philosophy Electives	6	Minor Subject	3	Minor Subject	3
Minor Subject	3	Upper-Division Electives	6-9	Upper-Division Electives	6-9	Upper-Division Electives	6-9
Upper-Division Electives	6-9						
	15-18		15-18		15-18		15-18

Courses of Instruction

Lower Division

4. Introduction to Philosophy. I or II. 3 hr. Designed to acquaint the student with the nature of philosophy. A prerequisite for nearly all courses in Philosophy.

Upper Division

105. Oriental Philosophy. I or II. 3 hr. PR: Philos. 4. Major philosophies of Asia.

106. Symbolic Logic I. I. 3 hr. PR: Philos. 4 or consent. The logic of statements, the logic of predicates, and the logic of identity and descriptions.

107. Ethics. I or II. 3 hr. PR: Philos. 4 or consent. Various theories on the nature of obligation, right and good, and the function of punishment.

108. Social and Political Philosophy. I or II. 3 hr. PR: Philos. 4, or consent. Applying moral concepts to questions concerning the individual and the state.

112. History of Ancient and Medieval Philosophy. I. 3 hr. PR: Philos. 104, or consent. Major philosophies of the Western World from the pre-Socrates to the 16th Century.

113. History of Modern Philosophy. II. 3 hr. PR: Philos. 104 or consent. Major philosophies of the Western World from Descartes to J. S. Mill.

114. Contemporary Philosophy. I. 3 hr. PR: Philos. 4 or consent. Major philosophies of 19th and early 20th centuries.

116. Theory of Knowledge 1. I. 3 hr. PR: Philos. 4, or consent. The major philosophical problems associated with perception and casuality.

118. Philosophy of Art. I. 3 hr. PR: Philos. 4. The nature of art and beauty.

205. Philosophy of Mind 1. I or II. 3 hr. PR: Philos. 4 and Philos. 116. Typical problems in this course have to do with whether there are minds, the difference between minds and bodies, other minds, and the analysis of mental concepts.

206. Symbolic Logic 2. I or II. 3 hr. PR: Philos. 106. Formalization of the material in the previous term, the concepts of consistency, decidability and completeness, and the elementary theory of classes (sets).

207. Philosophy of Language 1. I or II. 3 hr. PR: Philos. 106, Philos. 116 or consent. An analysis of the nature of meaning and language.

208. Philosophy of Religion. I or II. 3 hr. PR: Philos. 4 and Philos. 112 or 113. An attempt to discover the defensible foundations of religion.

209. The Problem of Induction. I or II. 3 hr. PR: Philos. 4 and Philos. 106, (or equiv.), or consent. An examination of the basis of inductive inference.

210. Philosophy of Science 1. I or II. 3 hr. PR: Philos 4 and Philos. 106, or consent. An analysis of the conceptual and methodological foundations of science.

211. Greek Philosophy. I or II. 3 hr. PR: Philos. 4, 112, 113.

212. Philosophy of History. I or II. 3 hr. PR: Philos. 104 and Philos. 112, 113 or consent. Typical theoretical problems such as the nature of historical explanation, relativism, and the status of speculative principles of history.

213. Kant. I or II. 3 hr. PR: Philos. 104, 112, and 113.

214. Introduction to Analytic Philosophy. I or II. 3 hr. PR: Philos. 106, and Philos. 116, or consent. Contemporary schools of analytic philosophy.

216. Theory of Knowledge 2. I or II. 3 hr. PR: Philos. 4, Philos. 106, and Philos. 114 or Philos. 116. The concepts of necessity and truth.

217. Metaphysics. I or II. 3 hr. PR: Philos. 4, Philos. 112 and 113. An analysis of the nature of existence and reality.

220. Rationalism. I or II. 3 hr. PR: Philos. 4, 112, and 113. Descartes, Spinoza, and Leibniz.

221. Empiricism. I or II. 3 hr. PR: Philos. 4, 112, and 113. Locke, Berkeley, and Hume.

222. Philosophy of Mathematics. I or II. 3 hr. PR: Philos. 206 or consent. Contemporary viewpoints in the foundations of mathematics.

233. Theory of Value. I or II. 3 hr. PR: Philos. 4 and Philos. 107. Normative disciplines in relation to human conduct.

224. Seminar. 3 hr. Selected topics.

225. Problems in Philosophy. I or II. 3 hr. PR: Philos. 4 and consent.

THE PHYSICAL SCIENCES

1, 2. Introductory General Course. I, II. 4 hr. per sem. This course is intended to acquaint the student with the physical world in which he lives, and particularly with the method and philosophy of modern science in its approach to an explanation of physical reality. The course has two main objectives: to serve as orientation for those students who have not chosen their major field of interest, and to present a broad general view of the physical sciences to students whose interests lie in other fields. Two periods each week are devoted to lectures on the application of the scientific method to the solution of specific problems in chemistry, physics, geology, and astronomy. The third period is devoted to discussion of the mathematical background required for an appreciation of modern science, and to general lectures on the methods and philosophy of science. There is an optional period of individual instruction and the answering of student questions. The two-hour laboratory serves more to acquaint the student with the approach science takes to various problems than to confer specialized skills. Students who have successfully completed as much as eight hours of chemistry or physics or geology cannot take Phys. Sci. 1 and 2 for credit.

218. Physical Science Seminar. S. 1 hr. PR: At least 6 hr. of collegiate work in biology, chemistry, or earth sciences. In unusual instances, this prerequisite might be waived if enrollee had been teaching in one of these fields. Special course for NSF Institute for Secondary Teachers.

PHYSICS

Laboratory Fees

A non-refundable fee is required of all students who take the following laboratory courses in Physics:

Course	*Per Semester*	*Course*	*Per Semester*
Physics 1	$ 5.00	Physics 102	$ 5.00
Physics 2	5.00	Physics 116	10.00
Physics 11	5.00	Physics 257	10.00

Various courses offered in Physics are designed to meet the needs of students in the Colleges of Education, Engineering, Arts and Sciences, Agriculture, and the School of Pharmacy.

Suggested Curriculum for A.B. Degree in Physics

The Bachelor of Arts degree is intended for those students who wish a foundation in physics but with a wider choice of elective subjects than is possible for those wishing to enter the field at a professional level. A total of 124 hours exclusive of Military or Air Science, Physical Education, and English 0 are required. At least two of the following are required: Physics 225-226, 231-232, 233-234, and at least two of the accompanying laboratories.

FIRST YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Mil. or Air Sci. 1	2	Mil. or Air Sci. 2	2
Phys. Ed. 1	1	Phys. Ed. 2	1
English 1	3	English 2	3
Math. 3	3	Math. 15	4
Elective	3	Elective	3
Elective	3	Language	3
†Language	3		
	18		16

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Mil. or Air Sci. 3	2	Mil. or Air Sci. 4	2
Physics 11	4	Physics 102	4
Math. 116	4	Math. 117	4
Chem. 3	5	Chem. 4	5
Language	3	Language	3
	18		18

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Math. 200	3	Elective	3
Physics 100	3	Physics 100	3
Physics 200	3	Physics 200	3
Phys. 200 Lab.	1	Phys. 200 Lab.	1
Elective	3	Elective	3
Elective	3	Elective	3
	16		16

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Physics 200	3	Physics 200	3
Physics 200 Lab.	1	Physics 200 Lab.	1
Elective	3	Elective	3
Elective	3	Elective	3
Elective	3	Elective	3
Elective	3	Elective	3
	16		16

†If Math. 4 (Trigonometry) is required, postpone language one semester. German, Russian, and French are recommended.

Suggested Curriculum for B.S. Degree in Physics

The Bachelor of Science degree is designed for those students who expect to prepare for graduate work or to enter physics as a profession upon completion of the bachelor's degree. A minimum of 139 credit hours is required for graduation.

The first two years of the curriculum for the B.S. degree are the same as for the A.B. degree listed above.

The following are required: Physics 225-226, 231-232, 233-234 and two of the accompanying laboratories. At least 6 hours of a second language (German, Russian or French) are required, 9-12 hours are recommended.

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Math. 200	3	Math. 200	3
Physics 100	3	Physics 100	3
Physics 200	3	Physics 200	3
Physics 200	3	Physics 200	3
Phys. 200 Lab.	1	Phys. 200 Lab.	1
Phys. 200 Lab.	1	Phys. 200 Lab.	1
2nd Language	3	Language	3
	17		17

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Physics 200	3	Physics 200	3
Physics 200	3	Physics 200	3
Elective	3	Elective	3
Elective	3	Elective	3
Elective	3	Elective	3
Elective	3	Elective	3
	18		18

Courses of Instruction

Lower Division

1. Introductory Physics. I, II. 4 hr. PR: Plane geometry and algebra. Mechanics, sound, heat.

2. Introductory Physics. I, II. 4 hr. PR: Physics 1. Electricity, magnetism, and light.

11. General Physics. I, II. 4 hr. PR: Math. 15. Not open to students who have credit for Introductory Physics. Mechanics, sound, and heat.

Upper Division

102. General Physics. I, II. 4 hr. PR: Physics 11, Math. 15. Not open to students who have credit for Introductory Physics. Light, electricity, and magnetism.

109, 110. A Problem Course in General Physics. I, II. 2 hr. per sem. Pre- or corequisite: Calculus. Open to students who have taken Introductory Physics or equiv.; not open to students who have taken General Physics.

113, 114. Introductory Electronics. I, II. 3 hr. per sem. PR: 1 year of college physics.

116. Photography. II. 3 hr. PR: 1 year of college physics, 1 year of college chemistry. The physics and chemistry of photography with practical application.

117. Descriptive Meteorology. I. 3 hr. PR: 1 year of college physics. Description of the atmosphere and its weather. Reading and analysis of weather maps. Weather observations.

118. Physical Meteorology. II. 3 hr. PR: Physics 117 or equiv. The physics of the atmosphere. Analysis of surface and upper air charts. Forecasting.

124. Modern Physics for Engineers. I, II. 4 hr. PR: Physics 11, 102. Aspects of physics of current engineering interest.

125, 126. Modern Physics for Engineers. I, II. 3 hr. per sem. PR: Physics 11, 102. Aspects of physics of current engineering interest.

201, 202. Special Topics. I, II. 1-3 hr. per sem.

213. Introductory Electronics. S. 3 hr. PR: 1 year of college physics. Primarily for Education majors, not for graduate credit for science majors.

218. Dynamic Meteorology. II. 3 hr. PR: Calculus, Physics 117 or equiv. Dynamics of lower atmosphere relating to transport and dispersion of foreign matter.

221. Optics. II. 3 hr. PR: Calculus, 1 year of college physics. Work with optical instruments, spectrometry, interferometry, and polarization.

225, 226. Modern Physics. I, II. 3 hr. per sem. PR: Calculus, Physics 11, 102, or equiv. Particle analysis, phenomena connected with the structure of the atom, and nucleus. Not open to those who have credit for 125 and 126.

231, 232. Theoretical Mechanics. I, II. 3 hr. per sem. PR: Calculus, Physics 11, 102, or equiv. Theorems and problems in intermediate mechanics.

233, 234. Introductory Electricity and Magnetism. I, II. 3 hr. per sem. PR: Calculus, Physics 11, 102, or equiv. Electrostatics, magnetostatics, network analysis, introduction of electrodynamics, and applications.

241, 242. Physics Laboratory. I, II. 1 hr. To accompany Physics 231, 232.

243, 244. Physics Laboratory. I, II. 1 hr. To accompany Physics 233, 234.

245, 246. Physics Laboratory. I, II. 1 hr. To accompany Physics 225, 226.

247, 248. Physics Seminar. I, II. No credit. Required of junior, senior and graduate physics majors.

249. Optics Laboratory. II. 1 hr. PR: Physics 11, 102 or equiv. To accompany Physics 221.

254. Outline of Modern Physics. S. 3 hr. PR: 10 hr. college physics, 1 year college math. Selected topics in modern physics. Primarily for Education majors, not open to physics majors.

255, 256. Workshop for Physics Teachers. SI, SII. 3 hr. PR: 1 year college physics, 1 year college mathematics. Techniques of apparatus construction and demonstration. Primarily for Education majors, not open to physics majors.

257. Photography. SI. 3 hr. PR: 1 year physics or equiv. Primarily for Education majors, not open to physics majors.

258. Light. SII. 3 hr. PR: 1 year physics or equiv. Primarily for Education majors, not open to physics majors.

261, 262. Molecular Physics. I, II. 3 hr. per sem. PR: Physics 225, 226. Molecular spectra, molecular structure and solid state physics.

271, 272. Solid State Physics. I, II. 3 hr. PR: Physics 225, 226.

283. Thermodynamics. I. 3 hr. PR: Calculus, Physics 11, 102, or equiv. Application of first and second laws of thermodynamics to physical systems.

284. Kinetic Theory. II. 3 hr. PR: Calculus, Physics 11, 102, or equiv. Boltzman distribution, viscosity, diffusion, thermal conductivity, specific heat.

287, 288. Introduction to Mathematical Physics. I, II. 3 hr. per sem. PR: Calculus, Physics 11, 102, or equiv. Boundary value problems in vibration, heat conduction, hydrodynamics, special relativity.

POLITICAL SCIENCE

The political science curriculum provides a systematized course of study of the origin, basis, and nature of the state in its many and varied aspects. These include: principles, organization, and structure of political institutions, both domestic and foreign; the processes and functioning of government; interrelationships between political institutions on various levels of government; political behavior; the control of government instrumentalities and the means for holding its agents responsible; and the identification and analysis of public problems falling within the range of government. Course offerings in the Department of Political Science provide a basic general knowledge of the field, as well as more extensive and intensive training in the specialized areas of political science, particularly on the senior and graduate levels.

Primary departmental objectives may be classified under four principal headings as follows:

1. To develop an understanding of the role of government in modern society, thus contributing to a general, liberal education and to preparation of students for a career in the public service.

2. To impart a basic knowledge and understanding of the techniques and processes of government and administration to those persons who look forward to a career in the public service.

3. To provide pre-professional training for students who are preparing to enter the legal profession.

4. To provide advanced and specialized instruction, through the Ph.D. degree, for persons who wish to enter teaching or research in the field of political science.

The political science curriculum, therefore, enables the major in this field to gain an understanding of the political society in which he lives and also to plan his academic program so as to prepare himself for a career of public service.

Courses Suggested for Political Science Majors

FIRST YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
English 1	3	English 2	3
Group A	3-4	Group A	3-4
Group C	3-4	Group C	3-4
Foreign language	3	Foreign language	3
Phys. Ed.	1	Phys. Ed.	1
Mil. or Air Sci.	2	Mil. or Air Sci.	2
Psychol. 1 (or 2nd year)	3	Sociol. 1 *or* Geography 7 (or 2nd year)	3
	15-19		15-19

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Pol. Sci. 1	3	Pol. Sci. 2	3
Group A	2-3	Group A	2-3
Group C	3-4	Group C (if necessary to fulfill Core Curriculum requirements.)	3-4
Foreign language (if necessary)	3	Foreign language (if necessary)	3
History 52	3	History 53	3
Phys. Ed. (W)	1	Phys. Ed. (W)	1
Economics 1 (if possible)	3	Economics 2 (if possible)	3
	15-19		15-19

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Pol. Sci. 200	3	Pol. Sci. Group V or Group IV	3
Pol. Sci. Group I	3	Pol. Sci. Group II or Group III	3
Pol. Sci. Group IV or Group V	3	Elective, minors	3
Elective, minors	3	Econ. 52 (if not taken prev.)	3
Econ. 51 (if not taken prev.)	3	Pol. Sci. elective	3
Electives	3-6	Electives	3-6
	18-20		18-20

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Pol. Sci. 170	3	Pol. Sci. 171	3
Pol. Sci. Group II or Group III	3	Electives, minors	6-9
Electives, minors	6-9	Pol. Sci. electives	6-9
Pol. Sci. electives	6-9		
	18-21		18-21

Requirements for Majors

Hours. Undergraduate majors in political science are required to take at least 26 hours of upper-division course work in the department. There must be a first minor consisting of 12 hours of upper-division courses, normally in history, economics, sociology, psychology, or philosophy, and a second minor of 6 hours of upper-division work in a related field.

Required Courses. Each undergraduate major is required to take Political Science 1 (3 hr.) or 2 (3 hr.). Departmental majors are encouraged to take both Political Science 1 and 2.

Distribution of Courses. The major in political science should work out his program in such a way as to secure a well-rounded knowledge of the field, as well as to concentrate in some particular area. Although the 26 hours of upper-division work in political science is the minimum requirement, students should take at least 33 hours.

The following are distribution requirements for an undergraduate major in political science:

1. At least one upper-division course in each of the six groups into which the offerings of the department are divided.
2. At least three upper-division courses in some one group.

Groupings of Upper-Division Courses By Fields

I. *American National, State, and Local Government*
Pol. Sci. 111, 113, 120, 210, 211, 213, 214, 218, 221, 225, 226, 310, 311, 314, 320-321, 324, 325-326.

II. *Politics and Policy Development*
Pol. Sci. 130, 231, 232, 233, 234, 330-331, 334.

III. *Public Administration*
Pol. Sci. 140, 241, 244, 245, 246, 344, 346-347.

IV. *Foreign and Comparative Government*
Pol. Sci. 150, 250, 251, 252, 253, 254, 255, 256, 351-352, 354.

V. *International Relations, Organizations and Law*
Pol. Sci. 160, 261, 262, 263, 264, 265, 266, 361-362, 364.

VI. *Political Theory*
Pol. Sci. 170, 171, 272, 273, 274, 374, 375-376.

Courses of Instruction

Lower Division

1. Elements of Democratic Government. I, II. 3 hr. Introduction to government. Origin, forms, and functions of the state; organization and forms of government; and the relations of groups and individuals to the state. Primarily for freshmen.

2. The American Federal System. I, II. 3 hr. A survey course in American national government. Intended primarily for freshmen and sophomores.

Upper Division

101. Introduction to Government. I, II. 3 hr. (Exclusively for students in the College of Agriculture and the College of Engineering). A consideration of the basic principles and operation of national, state, and local government in the United States.

111. Functions of American National Government. I, II. 3 hr. The activities of the executive branch of government, particularly as they relate to social and economic development; expansion of government activities and services since 1932.

113. American Constitutional Principles. II. 3 hr. U.S. Constitution as interpreted by the Supreme Court. Treatment is analytical rather than historical. Text supplemented by some leading cases. Primarily for pre-law students.

120. State and Local Government. I, II. 3 hr. Survey of the legal basis, structure, and operation of state and local governments, their relations with each other and their place in the federal system.

130. Political Parties and Electoral Processes. I, II. 3 hr. The nature of political parties. Public regulation of parties and electoral processes. A close examination of suffrage, nominating devices, campaign procedures, and the conduct of elections.

140. Introduction to Public Administration. I, II. 3 hr. Introductory study of the development, organization, procedures, processes, and human relations factors of governmental administration in American democracy.

150. Contemporary European Governments. I, II. 3 hr. Comparative analysis by countries of constitutions, political structures, and functions, with major emphasis upon the United Kingdom, France, Russia, and West Germany.

160. International Relations. I, II. 3 hr. Introduction to contemporary world politics. Just enough background to make present-day international affairs more understandable.

170. History of Political Thought: Plato to Machiavelli. I. 3 hr. Examination of major political ideas from the Greeks to sixteenth century with special emphasis upon development of natural law and western conception of justice.

171. History of Political Thought: Machiavelli to Bentham. II. 3 hr. PR: Pol. Sci. 170 or consent. Analysis of the political ideas which developed from

the separation of faith and reason, the culmination of this movement in rational integral liberalism, and the origins of modern conservatism as expounded by Edmund Burke.

200. Research Materials and Techniques in Political Science. I. 3 hr. Basic source materials in political science and of the techniques and methods of governmental research.

210. American Political Institutions. I. 3 hr. PR: Pol. Sci. 2 or consent. Development of the Constitution, Congress, the Presidency, and the Supreme Court as institutions with special attention to current problems and issues.

211. Problems of American National Government. II. 3 hr. This course is intended to give recognition to the major contemporary problems of government. Extensive readings of background materials as well as current literature.

213. American Constitutional Law. I. 3 hr. PR: Pol. Sci. 2 or consent. Basic principles of American constitutional law as developed through interpretation with special emphasis on constitutional theories and national development.

214. Civil Rights and Liberties in the United States. II. 3 hr. PR: Pol. Sci. 213 or consent. Scope and meaning of civil liberty guarantees in the United States Constitution, as illustrated by cases involving original constitutional provisions, the federal Bill of Rights, and Civil War Amendments (with special attention to the rule of law; free speech, press, religion, assembly, and petition; personal security; racial discrimination; and the labor problem).

218. Government and Business. I or II. 3 hr. Pol Sci. 2 or consent. Government regulations of the economy dealing with the origin and development of public politics, constitutional and policies basis of regulation, relationships between political and economic institutions and processes, and an evaluation of the consequences of regulatory policies.

221. West Virginia Government and Administration. I, II. 3 hr. The organization and operation of the state government of West Virginia.

225. Municipal Government. II. 3 hr. Legal basis, structure, operation, and problems of municipal government and municipal relations with other governmental units.

226. Problems of State and Local Government. I. 3 hr. Current problems of state, county, and municipal governments. Students are expected to have completed Pol. Sci. 120 or its equiv.

231. History of Political Parties. I. 3 hr. The growth of political parties in the United States. Analysis of issues in presidential campaigns as they relate to political party development.

232. Public Opinion and Propaganda. II. 3 hr. Techniques of sampling and measuring public opinion; detection of propaganda; the nature of propaganda and methods of the propagandist.

233. Current Political Issues. I. 3 hr. Political party platforms and the major issues of the political campaign. Students will be expected to examine background materials thoroughly.

234. The Legislative Process. II. 3 hr. Structure and organization of legislative bodies. Powers of legislature. Detailed study of lawmaking procedures. The influence of outside forces.

241. Administrative Organization and Management. I. 3 hr. PR: Pol. Sci. 140 or consent. Analysis of governmental administrative organization and reorganization and of such management functions as leadership, planning, coordination, and financial organization.

244. Administrative Law and Regulations. II. 3 hr. PR: Pol. Sci. 140 or consent. Study of the law of administration, primarily by the case method, covering administrative powers, procedure in administrative adjudiciation and rule-making, discretion, judicial control, and administrative liability.

245. Public Administration and Policy Development. II. 3 hr. PR: Pol. Sci. 140 or consent. Analysis of decision-making and policy development in the administrative process by the case method.

246. Comparative Public Administration. II. 3 hr. The theory and practice of public administration in diverse cultures and national political systems.

250. Comparative Government. I. 3 hr. Comparative study of modern political institutions with particular attention to European constitutional government and politics.

251. Modern Dictatorships. II. 3 hr. Politically undemocratic governments. Provides background of dictatorship generally, followed by treatment of several modern dictatorships.

252. British Government and Politics. I. 3 hr. Intensive study of British government with emphasis upon both internal and external policies, primarily during the twentieth century.

253. The Commonwealth of Nations. II. 3 hr. Analysis of the political relationships between the members of the Commonwealth and a comparative study of the governments of the Dominions with particular reference to Canada and Australia.

254. Governments of Asia. I. 3 hr. Contemporary politics and governments of Asia.

255. Governments of Latin America. I. 3 hr. Comparative study of the major nations of Latin America.

256. Governments of the Middle East. II. 3 hr. The governments and political forces of the Middle East.

261. International Organization. I. 3 hr. Emphasis will be placed upon agencies created since the close of World War II. Some reference to development of international law and League of Nations.

262. Specialized Agencies of the United Nations. II. 3 hr. A detailed treatment of the specialized agencies and related institutions.

263. Public International Law. I. 3 hr. Law governing relations among nations, including development of rules, means of enforcement, and conflicts between theory and practice.

264. Conduct of American Foreign Relations. I. 3 hr. Basic concepts about and factors influencing the decision-making process and the conduct of United States foreign policy, with special attention to the problems of ends and means of democracy, pressure interest groups (i.e., the military-industrial complex and the administrative bureaucracy); recent theories, analytical tools, and methodology in the problem areas of confict-resolution, nonconsensus situations, and inter-nation influence; regional patterns, problems, and prospects of United States policy in Europe, Africa, Asia, the Middle East, and the Soviet bloc since 1945.

265. Basic Factors in Power Politics. II. 3 hr. PR: Pol. Sci. 2 or consent. Analysis of factors of power in the nation-state system. Evaluation of nationalism and concepts of national interest in modern world politics.

266. Soviet Foreign Policy. I. 3 hr. PR: Pol. Sci. 150 or 160 or consent. Basic concepts about and factors influencing choice in the formulation and execution of Soviet foreign policy; the development and present patterns in Soviet

foreign relations with key states and the United Nations; possible problems and prospects in future Soviet relations.

272. Recent and Contemporary Political Thought. I. 3 hr. Integral liberalism and the forces leading to the decline of liberalism and a critical analysis of the fascist and communist ideologies with their threat to the traditions of western civilization embodied in Christianity and conservatism.

273. American Political Theory. II. 3 hr. PR: Pol. Sci. 171 or consent. Major political ideas and their influence upon American society and government from the seventeenth century to the present.

274. Problems in Contemporary Political Thought. II. 3 hr. An intensive study of current trends in political thought through examination of the works of contemporary writers.

PSYCHOLOGY

Laboratory Fees

A non-refundable fee is required of all students who take the following laboratory course in Psychology:

Course	*Per Semester*
Psychology 104	$8.00

Courses in psychology are designed for one or more of the following ends: to promote a better understanding of human nature and behavior; to lay a foundation for graduate professional training; and to inculcate useful skills of psychological technology.

The emphasis of pre-professional undergraduate training in psychology should be on broad education in the humanities and in the behavioral, biological, physical and social sciences. During the first two years the student will meet most of the general requirements of the University and of the College. He will also take Psychology 1 or 3, 103, 104, and 130. During the junior and senior year he will complete the work of his major and minor and round out his education through electives. If the student intends to pursue psychology as a career, excessive undergraduate specialization is discouraged.

Courses of Instruction

Lower Division

1. Introduction to Psychology. I, II. 3 hr. Survey of general psychology. (Not for those who have credit for Psych. 3).

3, 4. General Psychology. I, II. 4 hr. Open to freshmen. Lectures and lab. Fundamentals of behavioral science with emphasis on biological aspects and research methods. Not for those who had Psych. 1.

20. Psychology of Personal Efficiency. I, II. 1 hr. For students whose scholastic achievement is below capacity. Diagnostic and remedial practice in areas which hamper personal or academic efficiency. For freshmen and sophomores; others by consent.

Upper Division

103. Experimental Psychology. I. 3 hr. PR: Psych. 1 or 3. Principles of experimental method, psychophysics and sensory processes surveyed at intermediate level.

104. Experimental Psychology. I, II. 3 hr. PR: Psych. 1 or 3. Lectures and lab. Principles of learning surveyed at intermediate level. Lab exercises and demonstrations.

115. Leadership and Human Relations. I and II. 3 hr. PR: Psych. 1, or 3 and 4. Leadership training, motivation and morale, human relations, safety, industry and society.

116. Social Psychology. I. 3 hr. PR: Psych. 1, or 3 and 4. Social factors which determine human behavior. The relationship of class, race, culture, social structure and other group phenomena to individual behavior. Other topics include: attitudes, public opinion, propaganda, mass media of information and national character.

130. Statistical Methods in Psychology. II. 3 hr. PR: Psych. 1, or 3 and 4. Analysis and interpretation of psychological data.

201. Physiological Psychology. I. 3 hr. PR: Psych. 103, 104 and Zool. 271 or equiv. The organic basis for psychological activities such as perception, emotion, motivation, and learning.

205. Individual Differences. II. 2 hr. PR: One course in psychology. Nature and extent of the differences among individuals in phychological traits such as intelligence and personality, as influenced by heredity, schooling, age, sex, and culture. Primarily for students in psychology and education.

206. Learning and Motivation. I or II. 3 hr. PR: Psych. 103, 104 or equiv. Survey of experimental data in the area of learning and motivation. Special emphasis on contemporary learning theory.

214. Job Analysis. I or II. 3 hr. PR: Psych. 244 or I.E. 140. Instruction and supervised practice in preparation and use of job analyses. For students of psychology, engineering, management, or rehabilitation counseling.

216. Attitudes and Propaganda. II. 3 hr. PR: Psych. 1 or 3 or consent. Includes: the nature of attitudes and opinions, attitude measurement, opinion changing, propaganda use and analysis, the social psychology of mass media, democratic values and public opinion. Designed to meet the needs of students from a variety of fields as well as psychology—especially sociology, political science, and journalism.

218. Psychology of Personality. I or II. 3 hr. PR: Two courses in psychology, or consent. Critical consideration of major theories of personality, including Freudian, neo-Freudian, learning theory, and trait theory. The basis and logic of personality theorizing will be stressed.

222. Child Behavior. I. 3 hr. PR: Psych. 1 or 3. Growth trends in behavior through adolescence, including development in the physical, intellectual, emotional, social, and personality areas.

225. Group Psychometric Testing. I. 3 hr. PR: Psych. 1 or 3, and 130. Theory underlying the construction of group tests of intelligence, aptitudes, interests, personality, and attitudes. Practice in administering, scoring, and interpreting them.

226. Advanced Experimental Psychology. II. 3 hr. PR: Psych. 103, 104, 130. Lectures and laboratory. Design of psychological experiments; psychophysics of audition and vision.

229. Abnormal Psychology. I, II. 3 hr. PR: Psych. 1 or 3. Major behavior disorders and the various psychological, surgical, chemical, and medical treatments thereof.

233. Exceptional Children. II. 3 hr. PR: Child or educational psychology. Study of children who present psychological problems because of: (1) exceptional mental retardation or advancement; (2) organic disabilities having behavior consequences, such as cerebral palsy or deafness; (3) disorders of conduct associated with atypical personality functioning. Of special interest to those who regularly deal with children as teachers, nurses, etc.

236. Psychology of Adjustment. I, II. 3 hr. PR: Psych. 1 or 3, or consent. Dynamic principles of human personality adjustment.

238. Introduction to Clinical Psychology. I or II. 3 hr. PR: Psych. 218, 236, or consent. The contribution of clinical psychology to understanding people. Foundation for advanced courses in clinical methods and skills. Of interest to advanced undergraduates and graduates in education, guidance, personnel, and social work as well as professionally-oriented students in psychology.

240. History of Psychology. II. 3 hr. PR: Psych. 1 or 3. Traces of development of the science and concepts of psychology from their origin in philosophy, physiology, and medicine up to the modern era.

242. Advanced Social Psychology. I. 3 hr. PR: Psych. 116 or consent. Contemporary theory and practice in social psychology.

244. Personnel Psychology. I. 3 hr. PR: Psych. 1, or 3 and 4, and a course in business, psychological, or engineering statistics. Application of psychological principles and techniques for selecting personnel, evaluating performance, analyzing jobs and workers.

245, 246. Seminar. I, II. 1-3 hr. Critical study of selected topics.

260. Statistical Methods in Psychology. I. 3 hr. PR: Psych. 130 or equiv. Sampling theory, probability, further parametric and non-parametric statistics.

270. Group Dynamics. (Same as Sociol. 270). I or II. 3 hr. PR: Introductory course in psychology or sociology, or permission. An interdepartmental course, combining psychological and sociological approaches, in which the dynamics of groups in operation are considered. The following subjects will be treated: leadership, informal communication and group pressures, the relation of group aims to group organization, and the effect of the group on personality. Attention is given to recent researches and to practical applications.

RELIGION

100. Introduction to the Gospels. I. 3 hr. A study of the four Gospels of the New Testament, involving a brief introduction to the literature and historical setting of the Gospels with an intensive study of the Christ event.

101. A Study of Paul. II. 3 hr. An introduction to the life and theology of Paul, involving a study of the letters of Paul and other pertinent early Christian literature.

102, 103. Introduction to the Old Testament. I, II. 3 hr. ea. A brief introduction to Old Testament literature, its historical background, its great personalities, and the development of beliefs and customs of importance both to Jews and to Christians. The second semester will deal primarily with the prophets. Each semester may be taken independently.

210, 211. Problems in Contemporary Christian Thinking. I, II. 3 hr. ea. Issues to be treated include the following: the function of reason in the Christian faith, the Christian understanding of history, the ecumenical and other recent movements within the Church, recent transformations of ethical and social thinking, and new interpretations of traditional Christian doctrines. It is highly recommended, but not required, that Theology 100, 101, 102, or 103 be taken as a background for this course. Eeach semester may be taken independently.

SOCIAL SCIENCE

1, 2. Introductory General Course. I, II. 3 hr. per sem. The interdisciplinary course in social science aids the student in his preparation for citizenship by advancing his understanding of the social order. In the first semester the concepts and forms of organization pertinent to economics, political science, and sociology are treated. In the second semester these social sciences are applied to the analysis of problem conditions such as economic dislocations and poverty, race relations and civil rights, and international relations. Three lectures and one optional discussion group per week.

SOCIOLOGY

The study of sociology should help the student increase his understanding of the society in which he lives. An undergraduate major in sociology provides basic preparation for teaching social sciences in high school and for professional careers in social work and other fields involving interpersonal relations. The study of sociology should be an aid in citizenship and intelligent participation in modern life.

A major in sociology consists of 18 to 24 hours of upper-division courses including, as a rule, Sociol. 202, *Introduction to Social Research*, and Sociol. 246, *Types of Sociological Theory*.

A student planning to major in sociology should take Sociol. 1 in either his freshman or sophomore year, and Sociol. 104 in his sophomore year. Sociol. 51 is also strongly recommended for the sophomore year.

Students who first enrolled in the University in September, 1964, or later, must fulfill the requirements of the Core Curriculum. The following program is offered as a guide to other students planning their program, but need not be followed exactly.

FIRST YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
English 1	3	English 2	3
Foreign language	3	Foreign language	3
Laboratory Sci.	4	Laboratory Sci.	4
Electives		Electives	
Group 1	3-4	Group 1	3-4
Mil. or Air Sci. 1	1	Mil. or Air Sci. 2	2
		Phys. Ed.	1
	14-17		14-17

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Sociol. 1	3	Sociol. 104	3
Foreign language	3	Foreign language	3
Speech 11 (either Sem.)	0-3	Speech 11 (either Sem.)	0-3
Psych. 1 (either Sem.)* or Psych. 3	0-3-4	Psych. 1 (either Sem.)* or Psych. 3	0-3-4
Econ. 1 or Pol. Sci. 1	3	Econ. 2 or Pol. Sci. 2	3
Mil. or Air Sci. 3	2	Mil. or Air Sci. 4	2
Phys. Ed. (W)	1	Phys. Ed. (W)	1
Electives	0-4	Electives	0-4
	17-18		17-18

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Elective Group 3 (if not fulfilled)	3	Elective Group 3 (if not fulfilled)	3
Sociology electives	6	Sociol. 243	3
Minor subject elective	3	Sociology electives	6
Electives	5-6	Minor subject elective	3
		Electives	2-6
	17-18		17-18

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Sociol. 202	3	Sociol. 246	3
Sociology elective	3	Sociology elective	3
Minor subject elective	3	Minor subject elective	3
Electives	8-9	Electives	8-9
	17-18		17-18

*If Psychology is not elected to fulfill the laboratory science requirement. Otherwise, courses which satisfy Group 3 requirements are recommended in place of psychology. If not met in the sophomore year, the Group 3 requirement may be satisfied in the junior year.

Courses of Instruction

Lower Division

1. Introduction to Sociology. I, II. 3 hr. Basic concepts; fundamental institutions and functions of society.

51. Introduction to Anthropology. I, II. 3 hr. Introductory survey of the field of anthropology, with emphasis on the nature of culture. Behavior of man illustrated by the simpler societies.

Upper Division

Prerequisites for Sociology courses in the "200" series: Sociol. 1 or 51, or Social Sci. 1, 2 (or equivalents).

104. Social Problems. I, II. 3 hr. Examination, within a sociological framework of such topics as labor-management relations, social class conflict, family disorganization and parent-child relations, race relations, juvenile delinquency and crime, religious adjustment, and social planning.

122. Folk Societies. II. 3 hr. Comparative study of the customs of several folk and peasant societies as they encounter the techniques and social development of the modern world.

202. Introduction to Social Research. I. 3 hr. Trends in social research; examination of methods and techniques.

205. Urban Sociology. II. 3 hr. Sociological analysis of institutional structure, social values, and individual goals in urban-industrial society, bureaucratization, collectivization, and mass culture; emphasis on political, economic, religious, and family institutions.

206. Sociology of Rural Life. II. 3 hr. Social aspects of rural living. Characteristics of rural population, social structure, and institutional arrangements: family, community, education, religion, recreation, health, welfare, and local government.

208. The Community. S. 3 hr. An analytical course intended chiefly to provide background data for students interested in programs of community action. Topics to be included are: the basic characteristics of communities; community institutions and resources; social cleavages within the community; and community survey and community planning.

210. The Family. I, II. 3 hr. Sociological analysis of the contemporary family and its problems.

211. Sociology of Childhood. II. 3 hr. Adjustment of child to American culture.

220. Social Change. I. 3 hr. Sociological analysis of the major changes now going on in our society, of the forces underlying them, and of the tensions to which they give rise. Alternative future directions; rational manipulation and planning for social change.

224. Social Stratification. I. 3 hr. Description and analysis of various types of stratification systems, such as class and caste; social mobility, and status-striving. The course emphasizes the place of status, prestige, and power in the structure of American society.

229. Population and Migration. I. 3 hr. Population theories; growth, composition, and distribution of American population; immigration and culture pluralism; internal migrations and their consequences.

231. Race Relations. I. 3 hr. Race relations in the U.S. with emphasis on the American Negro.

233. Criminology. I. 3 hr. Explanation of crime; critical study of criminal justice, penal methods, and reform movements.

234. Juvenile Delinquency. II. 3 hr. A scientific study of the nature, extent, and causes of delinquency in the United States. Methods of treatment, correction, and prevention, with emphasis on the work of the juvenile courts.

235. Collective Behavior. I. 3 hr. Analysis of new group formation and behavior following social dislocation, social unrest, crowd behavior, and other forms of social contagion; the public and public opinion; social movements.

244. Culture and Personality. II. 3 hr. Significant interrelations between the individual and his culture.

246. Types of Sociological Theory. II. 3 hr. Examination of leading schools of sociological thought in our day.

250. Human Relations in Industry. II. 3 hr. The sociology of industrial relations. The factory or business firm as a social system. Formal and informal relations within the plant.

260. Complex Organizations. II. 3 hr. A sociological analysis of large-scale organizations emphasizing their structure and functions. The course will examine the place in contemporary society of such organizations as the military, prisons, and hospitals.

265. The Sociology of Latin America. II. 3 hr. A systematic sociological consideration of the problem of "underdeveloped" countries, with special emphasis on the culture, social structure, and national character of Latin American countries. The main focus will be on social change.

270. Group Dynamics. (Same as Psych. 270). I. 3 hr. An interdepartmental course, combining psychological and sociological approaches, in which the dynamics of groups in operation are considered.

275. Cross-Cultural Studies in Education. I. 3 hr. Comparative study of education and cultural transmission in simple societies around the world.

276. Cross-Cultural Studies in Development. II. 3 hr. Comparative study of the processes of change in societies in the early stages of industrialization.

281. African Society and Culture. I. 3 hr. Analysis of contemporary societies and cultures south of the Sahara.

282. Latin-American Society and Culture. II. 3 hr. Anthropological study of Latin-American folk cultures.

285. Introduction to Archaeology. I. 3 hr. Survey of archaeology: its methods and significance for the understanding of prehistoric cultures.

286. Archaeology of Appalachia. II. 3 hr. Intensive study of the content, distribution, sequence, and significance of early Appalachian Indian cultures.

290. Special Topics in Anthropology. I, II. 3 hr.

SPEECH

The curriculum of the Department of Speech is so organized that a student may receive basic training in the cultural and practical aspects of any one or more of the four fields of speech: (1) rhetoric and public address; (2) radio and television; (3) speech correction and audiology; (4) teaching of speech. In all courses of training in speech, professional standards of achievement are emphasized.

Major Requirements. The minimum number of hours in speech for a major is 36 semester hours of credit, including the following required courses: Speech 3, 10, 34, 40, 120, 121, and 250. The 15 hours of electives taken in addition to these required courses must be upper-division courses and may represent concentration in one field or an appropriate distribution in all fields. A total of 42 semester hours in speech may be counted toward graduation.

Forensic Activities. Intramural and intercollegiate forensics, including debate, oratory, and extemporaneous speaking, receive due attention. Speech tournaments, trips, and tours, as well as campus contests, are included in the program. Participation in the activities may lead to membership in Delta Sigma Rho-Tau Kappa Alpha, honorary forensic fraternity.

Radio and Television Programs. Faculty-directed programs in both radio and television offer students opportunity to participate in productions which utilize studio facilities both on the campus and in cooperating commercial stations in the area.

Off-Campus Speech Services. The Department of Speech sponsors and furnishes student programs for off-campus performances before civic and women's clubs, community organizations, and church and other groups throughout the community and the State.

Speech and Hearing Problems. Under the direction of a speech and hearing specialist, the Department maintains a clinic for diagnosis and treatment of speech and hearing deficiencies. All University students with speech and hearing handicaps may avail themselves of the services of the clinic.

Suggested Distribution of Courses for A.B. Degree in Speech

(*The University Core Curriculum requirements to be observed and included.*)

FIRST YEAR				SECOND YEAR			
First Sem.	*Hr.*	*Second Sem.*	*Hr.*	*First Sem.*	*Hr.*	*Second Sem.*	*Hr.*
English 1	3	English 2	3	Foreign language	3	Foreign language	3
Science*	4	Science*	4	Hist. 1 or 52**	3	Hist. 2 or 53**	3
Foreign language	3	Foreign language	3	Pol. Sci. 1	3	Pol. Sci. 2	3
Speech 3	3	Speech 10	3	English Lit.	3	English Lit.	3
Mil. or Air Sci.	2	Mil. or Air Sci.	2	Speech 34	3	Speech 40	3
Phys. Ed.	1	Phys. Ed.	1	Mil. or Air Sci.	2	Mil. or Air Sci.	2
Electives	2	Electives	2	Phys. Ed. (W)	1	Phys. Ed. (W)	1
	16-18		16-18		17-18		16-17

THIRD YEAR				FOURTH YEAR			
First Sem.	*Hr.*	*Second Sem.*	*Hr.*	*First Sem.*	*Hr.*	*Second Sem.*	*Hr.*
Speech 120	3	Speech 121	3	Speech Elect.	6	Speech Elect.	6
Speech 141	3	Speech 250	3	Electives***	10	Electives***	10
Speech Elect.	3	Core or Other Elective***	10				
Core or Other Elective***	10						
	18		16		16		16

*Students working toward certification should take Biology.
**Students working toward certification should schedule History 1 and 2.
***Students working toward certification should make certain that their elected courses include those necessary for teacher certification.

Teacher Training

For students working toward certification in Speech, attention is called to the footnoted items in the above distribution of courses. Also, in the selection of their electives, such students should be certain to elect the required Drama courses for certification in the field of Speech. A minimum of 33 hours in the field is needed for certification.

Suggested Distribution of Courses for Bachelor of Science Degree in Speech Correction and Audiology

FIRST YEAR

Students will take the courses in the College of Arts and Sciences necessary to satisfy the Core Curriculum requirements,* and include either Biology 1 and 2 or Zoology 1 and 2 as the laboratory science. Available elective hours should be used to take Speech 3 and Psychology 1.

(Total semester hours for the year—30-36).

SECOND YEAR

Continuation of Core Curriculum program with available elective hours used for Speech 11 and Speech 50.

(Total semester hours for the year—30-36).

THIRD YEAR				FOURTH YEAR			
First Sem.	*Hr.*	*Second Sem.*	*Hr.*	*First Sem.*	*Hr.*	*Second Sem.*	*Hr.*
Speech 152	3	Speech 154	3	Speech 158	3	Speech 253	3
Speech 153	3	Speech 157	3	Speech 252	3	Speech 277	3
Speech 156	3	Speech 251	3	Speech 276	3	Psych.***	3
Psych. 222	3	Psych. 206	3	Speech 277	3	Electives**	6
Electives**	3-6	Electives**	3-6	Psych.***	3		
	15-18		15-18		15		15

*Students who intend to apply for public-school certification should follow the pre-education recommendations where choices of courses are available.

**Sufficient non-speech electives should be chosen to make up the hours required for graduation.

***Fourth year psychology courses may be selected from such offerings as Psych. 130, 205, 218, 229, 233, and 236.

The Bachelor of Science program is designed to provide the undergraduate background in speech and hearing science, speech pathology, audiology, and related content areas prerequisite to the continuation of the professional academic program at the graduate level.

As a part of the program and in order to receive credit for Speech 277, students will be required to complete approximately 200 clock hours of supervised clinical practice with cases in the clinic and local schools.

This program will enable the student to obtain provisional certification in "speech and hearing therapy" as defined in the 1964 *Standards for Accreditation* bulletin of the West Virginia Board of Education. To equate the courses listed above with the comparable offerings of the College of Education for certification purposes, the following pairs of courses may be considered equivalent: Ed. 105, 106, and Psych. 206, 222; Ed. 227 and Speech 276; Ed. 128 and Speech 277; Ed. 141 and and approved Education elective.

Courses of Instruction

Lower Division

3. Voice and Diction. I, II. 3 hr. Three class meetings per week, one lecture, two programmed-laboratories. Theoretical basis for attitudes and standards to proper speech, general problems of voice and diction, including individual analyses. Students are acquainted with special problems in the voice sciences and arts of breath control, tone production, resonance, and connected discourse. Emphasis is placed upon the desirability of a strong, flexible, resonant voice for clarity of communication. The phonetic approach to speech is used to analyze and to remedy diction problems. Voices are regularly tape-recorded, with corrective exercises provided through a programmed-laboratory method. Open to all students.

10. Communication in a Democratic Society. I, II. 3 hr. The nature, psychology, process and effects of communication in its various forms in our society. Open to all students.

11. Principles of Oral Communication. I, II. 3 hr. PR: English 1 and 2. The lecture-laboratory concept. Group and individual communication approach. The subject matter of group communication will include conference speaking, teciniques of interviewing, group dynamics, problem-solving, and decision making. The subject matter of individual communication will cover various aspects of inter-personal communicative situations such as informative, persuasive, and special-occasion problems as well as listening techniques.

34. Basic Speech Skills. I. 3 hr. Required of and limited to Speech Majors. Study of and practice in extemporaneous speaking. Integration of the spoken word, voice, and action for accurate communication of ideas and feelings. Stress upon selection, organization, and presentation of material in good oral language.

50. Speech Correction. II. 3 hr. Introductory course for those majoring in or interested in majoring in speech correction or audiology. Fundamentals of evaluation and therapeutic techniques of various oral communication disorders.

60. Junior Varsity Debate. I. 1-2 hr. (Not more than 1 credit hour each of two semesters). Intercollegiate debate training and participation preparatory to varsity team debating. Open to all freshmen and sophomores.

75. Parliamentary Procedure. I, II. 1 hr. Study of and practice in establishing rules of order and methods of conducting meetings, assemblies, societies, etc.

PUBLIC SPEAKING

Upper Division

120. Group Discussion. I, II. 3 hr. PR: Speech 11. Theory and practice of various forms of group discussion. Principles, methods, and types of group discussions; application of contemporary problems.

121. Argumentation and Debate. I, II. 3 hr. PR: Speech 11. Principles of argumentation, evidence, and reasoning, application to debating.

123. Advanced Argumentation and Debate. I. 2-4 hr. (Not more than 2 credit hours each of two semesters). PR: Speech 121. Primarily for varsity debaters and law students.

125. Advanced Public Speaking. I. 3 hr. PR: Speech 11. Techniques in composition and delivery of public speeches. Attention to parliamentary procedure.

126. Speech for Business and Industry. I or II. 3 hr. Designed particularly to meet the needs of business executives, supervisors, foremen, public relations personnel, salesmen, etc. Study of and performance in public speaking, conference methods, making reports, committee work, management leadership, group controls, and personnel relationships.

220. Speech Composition. II. 3 hr. PR: Speech 11 and consent. Materials of speech, organization, and style; application to delivery.

221. Persuasion. I. 3 hr. PR: Speech 11 and consent. Study and practice in identification of factors motivating human behavior and belief, how to secure and hold attention, the uses of suggestion, the dramatization of ideas. Application to advertising and writing as well as speaking. Adapted to needs of pre-law, commerce, and journalism students.

222. Forms of Public Address. II. 3 hr. PR: Consent. Composition and delivery of the oration, political speech, speech of introduction, dedicatory address, and eulogistic speech.

223. Advanced Group Discussion. II. 3 hr. PR: Consent. Application of the principles and practices of group discussion to classroom teaching, the conference tables, committee work, policy-determining groups, and the public forum. Opportunities for participation by members of the class using current national and international problems.

225. Interscholastic Forensics. S. 3 hr. PR: Consent. Interscholastic public-speaking activities with emphasis upon types commonly termed original speech, such as debate, oratory, and extemporaneous speaking. Opportunity for performance in each type will be provided.

RADIO AND TELEVISION

Upper Division

40. Introduction to Broadcasting. I and II. 3 hr. Survey of the industry. The development of broadcasting, its responsibilities, and job opportunities. Organization of stations and their relation to networks. Federal regulations and industry codes. Technical aspects of radio and television. Brief consideration of programming and production techniques.

141. Radio and Television Announcing. I and II. 3 hr. Procedures and routines of announcing in both media. Staff assignments, regulations, logged broadcasting operations, reports, and emergency procedures. Practice in reading of news and commercial copy.

143. Fundamentals of Radio Production. II. 3 hr. PR: Speech 140 or consent. The operation and care of studio and control-room equipment. Non-technical study of control and transmission of all types of radio programs. Blending of sound, music, and speech in production. Students in this class will participate in the production of University radio programs. Lecture and laboratory.

144. Radio and Television Continuity Writing. I. 3 hr. Format of all types of radio and television writing except dramatic scripts. Continuity for music programs, talks, interviews, round-table discussions, forums, and variety shows.

145. Fundamentals of Television Production. II. 3 hr. PR: Speech 140 or consent. Elementary treatment of technical aspects. Station organization and personnel. Theory of camera operation and picture composition. Techniques of television directing and staging. Field trips to educational and commercial stations for observation. Students in this class will participate in the production of University television programs. Lecture and laboratory.

240. Radio and Television Dramatic Writing. II. 3 hr. PR: Speech 140 and 144, or consent. Dramatic script, documentaries, poetry programs, serial dramas, and children's shows for commercial and educational purposes. Scripts are written to be aimed at definite markets.

242. Radio Workshop. I. 3 hr. PR: Consent. Discussion of techniques of radio production. Laboratory experience in the production of University radio programs. Adapted to students interested in commercial and educational broadcasting.

243. Television Workshop. I. 3 hr. PR: Consent. Discussion of techniques of television production. Laboratory experience in the production of University television programs. Adapted to students interested in commercial and educational broadcasting.

244. Radio and Television Program Planning. II. 3 hr. PR: Speech 140 and consent. Analysis of the purpose and basic idea of a program in relation to audience composition. Requirements of effective structure. Practice in laying out program formats for all types of radio and television programming.

NOTE: For additional courses of training for television, refer to Drama courses in the Creative Arts Center section of this bulletin.

SPEECH CORRECTION AND AUDIOLOGY

Upper Division

152. Basic Speech and Hearing Science. I. 3 hr. Consideration of the application of certain principles of the physical and social sciences to an understanding of the process of human oral communication.

153. Applied Phonetics. I. 3 hr. Standard speech sounds in our language. Use of symbols for recording speech sounds; application of the use of such symbols in representing various usages of speech, special emphasis on analyzing and recording defective speech. Dynamic concepts studied.

154. Anatomy of the Speech and Hearing Mechanism. II. 3 hr. Anatomical and physiological study of the vocal mechanisms and the ear.

156. Articulation and Voice Disorders. I. 3 hr. PR: Speech 50 or 250. A detailed consideration of articulation and voice disorders including speech and language retardation and esophageal speech from an etiological, diagnostic, and therapeutic point of view. Diagnostic and therapeutic procedures with these disorders will be developed.

157. Hearing Problems. II. 3 hr. PR: Speech 50 or consent. General orientation to the field of audiology and the specialties which are included. A survey of the problems of the hearing-handicapped, basic hearing instruments, measurement procedures, and general goals of hearing therapy.

158. Bases of Aural Rehabilitation for Children and Adults. I. 3 hr. PR: Speech 157. Study of the perceptive and behavioral problems of aurally handicapped individuals in society, and approaches to methods of alleviating and compensating for hearing loss.

250. Survey of Oral Communication Disorders. I. 3 hr. PR: Consent. A survey of basic concepts and principles of the disorders of speech and their treatment. Primary attention is given to the more common speech deviations. Students observe examination and corrective methods of therapists in the clinic and schools. Normal speech and hearing development of children is considered. This is an orientation course for students majoring in speech as well as teachers, school administrators, psychologists, and rehabilitation workers.

251. Advanced Speech Correction. II. 3 hr. PR: Speech 156. Study of the speech-retarded child and organically based speech disorders including cleft palate, cerebral palsy, esophageal speech, and phonation.

252. Stuttering. I. 3 hr. PR: Speech 156. Theories and therapies of stuttering.

253. Profound Organic Speech Disorders. II. 3 hr. PR: Speech 251 or consent. Speech and language disorders related to cerebral injury. Emphasis on aphasia and aphasia therapeutics. Differential diagnosis of children with delayed speech and language.

271. Diagnostic Audiometrics. I. 3 hr. PR: Speech 157 and consent. A study of the various audiometric tests outlining the dimensions of hearing. Test administration and interpretation.

272. Hard of Hearing Therapy. II. 3 hr. PR: Speech 158 or consent. Bases and procedures of acoustic training and speech reading.

275. Speech Problems of Children. II. 3 hr. PR: Consent. Normal development of speech habits in children. Diagnostic and remedial procedures for speech defects. Relationship between speech and allied activities such as reading, spelling, and disciplinary problems.

276. Procedures and Methods in Clinical Speech and Hearing. I. 3 hr. PR: Speech 156, 157. Principles and methods of diagnosis and appraisal of disorders of communication. Methods of organization and administration of clinical speech and hearing programs in schools, hospitals, community clinics, and state and national services.

*277. Clinical Practice in Speech. I, II. 1-6 hr. PR: Consent. Supervised diagnosis and therapy of speech disorders. (May be taken for a maximum of 3 semester hours per semester of undergraduate or graduate credit). Service to Ed. 227 students.

*Speech 277 and 278 meet the requirements of Educ. 128, which is necessary for certification.

*278. Clinical Practice in Hearing. I, II. 1-6 hr. PR: Consent. Supervised diagnosis and therapy of hearing disorders. (May be taken for a maximum of 3 semester hours per semester of undergraduate or graduate credit).

RELATED COURSES

Upper Division

170. Directed Speech Activities. I, II. 1-3 hr. PR: Consent of chairman of department. Chairman of department may grant credit for any extracurricular speech activity or study which is assigned to and directed by a member of the speech staff.

270. Psychology of Speech. II. 3 hr. PR: 6 hr. of psychology and 18 hr. of speech. Psychological principles involved in speech situation. Analysis of roles of emotion, habit, learning judgment, rating, and imagery in speech.

The College of Commerce

ADMINISTRATIVE OFFICERS

Thomas Corwith Campbell, Jr., Ph.D., *Dean of the College of Commerce* (1964), 1948.
Edwin William Crooks, D.B.A., *Assistant Dean of the College of Commerce* (1961), 1954.
James Howard Thompson, Ph.D., *Director of the Bureau of Business Research* (1957), 1948.

FACULTY

Vance Quentin Alvis, Ph.D., *Professor of Economics* (1960), 1956.
Thomas Corwith Campbell, Jr., Ph.D., *Professor of Economics* (1958), 1948
Howard Oliver Croasmun, B.S., *Lecturer in Accounting* (1956).
Edwin William Crooks, D.B.A., *Professor of Marketing* (1964), 1954.
Virginia Hamm Cross, M.B.A., C.P.A., *Lecturer in Economics* (1963).
Andrew Jackson Dadisman, Ph.D., *Professor Emeritus of Economics* (1951), 1914.
Lynn Edwin Dellenbarger, Jr., Ph.D., *Associate Professor of Finance* (1964).
Betty G. Fishman, M.A., *Lecturer in Economics* (1957), 1948.
Leo Fishman, Ph.D., *Professor of Economics and Finance* (1952), 1947.
Thomas William Gavett, Ph.D., *Associate Professor of Economics* (1961), 1957.
John Robert Goodwin, LL.B., *Assistant Professor of Business Law* (1964).
Raymond Michael Haas, D.B.A., *Assistant Professor of Marketing* (1961).
Paul William Hamelman, Ph.D., *Associate Professor of Management* (1964), 1960.
Sandra Russell Henderson, M.A., *Instructor in Economics* (1964),
Thomas Stanley Isaack, D.B.A., *Professor of Management* (1960), 1951.
Jay Ewers Johnson, M.B.A., C.P.A., *Assistant Professor of Accounting* (1961), 1956.
George Edward Kirk, M.B.A., *Assistant Professor of Management and Management Specialist, Appalachian Center* (1964).
Dennis Roger Leyden, B.S., *Assistant Professor of Economics* (1962).
William Frederick Lyle, M.B.A., *Instructor in Management and Marketing* (1964).
William Hayward McMillion, M.S., *Lecturer in Economics* (1964), 1952.
Robert Shriver Maust, M.S., C.P.A., *Assistant Professor of Accounting* (1963).
Joseph Newhouse, M.S., *Assistant Professor of Economics and Finance* (1956), 1949.
Evan Owen Roberts, Ph.D., *Professor of Economics and Marketing* (1953), 1939.
Arlene Greenman Silvers, M.S., *Lecturer in Economics* (1964).
Charles Preston Skaggs, M.S., C.P.A., *Assistant Professor of Accounting* (1964), 1954.
Richard Henry Slavin, Ph.D., *Associate Professor of Economics and Area Director, Charleston Appalachian Center* (1964), 1963.
Anthony Howarth Stocks, Ph.D., *Assistant Professor of Economics* (1961).
James Howard Thompson, Ph.D., *Professor of Economics* (1958), 1948.
Carl Vindall Trosch, M.B.A., *Lecturer in Economics* (1963).
Vern Hargrave Vincent, Ph.D., C.P.A., *Professor of Accounting* (1957).
Fred Earle Wright, A.M., *Associate Professor of Finance* (1962), 1951.

STANDING COMMITTEES

Executive: Messrs. Campbell (*Chairman*), Hamelman (1966), Roberts (1967) and Wright (1965).
Awards: Messrs. Roberts (*Chairman*), Crooks, Isaack, Vincent.
Faculty Welfare: Messrs. Johnson (*Chairman*), Gavett, Kirk.
Graduate: Messrs. Alvis (*Chairman*), Crooks, Isaack, Stocks.
Library: Messrs. Haas (*Chairman*), Dellenbarger, Maust.

Placement: Messrs. VINCENT (*Chairman*), GOODWIN, NEWHOUSE, SKAGGS.
Research: Messrs. THOMPSON (*Chairman*), CAMPBELL, FISHMAN, HAMELMAN.
Scholarship: Messrs. ROBERTS (*Chairman*), CROOKS, LEYDEN, VINCENT, WRIGHT.

THE VISITING COMMITTEE

ERNEST G. OTEY, *Chairman*, Bluefield
CHARLES R. NAILLER, Morgantown
JULIUS STERN, Parkersburg
GEORGE STINSON, Pittsburgh
ROBERT E. WITSCHEY, Charleston

HISTORY

The College of Commerce was established by the Board of Governors of West Virginia University on November 10, 1951, and began its initial year of operation in September, 1952. Prior to this, programs of study and courses leading to the bachelor's and master's degrees in business administration and economics had been offered for many years by the Department of Economics and Business Administration of the College of Arts and Sciences. In September, 1952, the Department of Economics and Business Administration became the College of Commerce.

OBJECTIVES

As a part of the University community, the College of Commerce seeks to provide students with a broad understanding and appreciation of our cultural and intellectual heritage. Furthermore, it offers the opportunity for study in depth in economics and business administration to those who plan to enter upon careers in the business world. Closely related to these objectives is service to the people of the state through consultation and research in many phases of the economic and business life of the state and region.

BUREAU OF BUSINESS RESEARCH

An integral part of the College of Commerce, the Bureau of Business Research undertakes research into business and economic problems—particularly those of West Virginia. This research program is carried out by faculty members and others under the general supervision of the Director of the Bureau of Business Research. Publication of a series of monographs, the *West Virginia Business and Economic Studies,* was begun by the Bureau in 1949.

ACCREDITATION

The College of Commerce is accredited not only through the approval of West Virginia University by national and regional accrediting agencies, but also through full membership in the American Association of Collegiate Schools of Business. This association is the only accrediting agency in the field of professional education for business at the collegiate level.

UNDERGRADUATE PROGRAMS

The College of Commerce offers programs leading to the degrees of Bachelor of Science in Economics and Bachelor of Science in Business Administration. In business administration, majors are offered in Accounting, Finance, Industrial Management, and Marketing.

Undergraduate work is taken in two divisions: the lower division or Pre-Commerce, in which freshmen and sophomores are enrolled; and the upper division, in which juniors and seniors are enrolled. Since the Pre-Commerce curriculum is designed to afford students a general educational background and provide a foundation for the work that follows, Pre-Commerce students are enrolled in the College of Arts and Sciences.

After completion of 58 semester hours of required and acceptable elective courses with a grade average of not less than "C," the student will be admitted to the College of Commerce. Upon admission each incoming student must select a major concentration area from among the following: Accounting, Economics, Finance, Industrial Management, and Marketing. Although narrowly specialized training is avoided, these concentration areas permit upperclassmen to acquire knowledge in depth in one area that is of particular interest to them.

All undergraduate programs are designed to assure a well-rounded education for students and to satisfy the requirements of the University Core Curriculum. Since many students do not follow ultimately the careers for which they prepare while in the University, the College of Commerce requires the completion of a Commerce Core which should better enable them, in terms of versatility and adaptability, to meet the changing courses of their careers than does a highly specialized program. Furthermore, it affords a comprehensive educational foundation upon which specialized programs can be built.

GRADUATE PROGRAMS

The College of Commerce offers programs leading to the degrees of Master of Business Administration, Master of Science in Business Administration, and Master of Science in Economics. Students in these programs register in the Graduate School. Details about these programs may be found in the 1965-66 Graduate School *Announcements.*

Requirements for Admission

UNDERGRADUATE STUDENTS

Applicants seeking admission to the College of Commerce for the purpose of obtaining a degree must have earned at least 58 semester hours of credit in required and approved elective courses in the Pre-Commerce curriculum at a grade average of not less than "C." No student will be admitted who has not completed Economics 51 and 52 and Accounting 51.

CREDITS ACCEPTED FROM A JUNIOR COLLEGE

The maximum amount of credit accepted from a junior college accredited by the North Central Association of Colleges and Secondary Schools or other regional accrediting associations will not exceed 72 hours. All courses in business and economics taken at a junior college will be classified as lower division by the Director of Admissions. Upper-division credit, however, may be established in College of Commerce *required* courses by advanced standing examinations. Upper-division credit may also be allowed for Commerce elective courses without examinations at the discretion of the Dean of the College of Commerce. No credit will be allowed for courses completed in a junior college subsequent to attainment of junior or higher rank by the student at the University.

ADVANCED STANDING EXAMINATION

An advanced standing examination is required for work of college grade for which college credit cannot be established on the basis of an official transcript of record and for College of Commerce upper-division required courses taken at junior colleges. Applications for these advanced standing examinations should be made to the Director of Admissions of the University not later than two weeks after the applicant's matriculation. Upon payment of the proper fee, the Director of Admissions will issue an examination permit and the applicant should take the examination before the end of the semester. After the examination, the examiner will report to the Director of Admissions the University course, if any, for which the applicant is entitled to credit.

Requirements for Degrees

BACHELOR'S DEGREES

To qualify for either the Bachelor of Science in Business Administration or Bachelor of Science in Economics degrees, the student who enters the University after September 1, 1964, must have:

1. Earned 128 semester hours of credit with a "C" or 2.0 grade-point average on all work attempted at West Virginia University (except that courses in which "D" grades were received in the freshman year may be repeated once during the sophomore year and the second grade shall replace the first if it is not lower than "D").
2. Earned 124 semester hours of credit in subjects other than required Physical Education, required Military or Air Science, English 0, and Mathematics 2. A maximum of 6 hours in Advanced Military or Air Science will be allowed toward credit for graduation and is counted as a Non-Commerce elective. Students who elect a foreign language must complete at least 6 hours in the same language.
3. Earned at least 60 hours of credit in upper-division courses (those numbered 100 or higher).
4. Earned at least 30 hours of credit while enrolled in this college and in residence.
5. Satisfied the requirements of the University Core Curriculum which are described on page 46.
6. Satisfied the course requirements of one of the Commerce curricula described below.
7. Demonstrated proficiency in the use of English, if this is his native language, by earning a grade of "C" or higher in English 2 at West Virginia University or by passing an English Proficiency Examination, which is described on page 46.

UNDERGRADUATE CURRICULA

The student must complete the following courses to qualify for a Bachelor of Science degree in the College of Commerce. These should normally be taken in the sequence described in the section entitled "Recommended Programs of Study."

I. NON-COMMERCE COURSES	B.S. in Bus. Admin.	B.S. in Economics
	Hr.	*Hr.*
English 1 and 2—Composition and Rhetoric	6	6
English 18—Advanced Composition	3	3
English 123—Business English	3	—
Speech 11—Oral Communications	3	3
Political Science 2—American Federal System	3	3
Psychology 1—Introduction to Psychology	3	3
Sociology 1—Introduction to Sociology	3	3
Mathematics 3—College Algebra	3	3
Military or Air Science 1, 2, 3, and 4 (Men)	8	8
Physical Education—Men's General Program	2	2
Physical Education—Women's Program	4	4
Electives—Core Group A	12	12
Electives—Core Group B (other than Economics)	6	6
Electives—Core Group C	9	9
Electives—Non-Commerce	7	13
TOTAL	65-71	68-74
II. UNRESTRICTED ELECTIVES	3	6

III. COMMERCE CORE COURSES	B.S. in Bus. Admin.	B.S. in Economics
	Hr.	*Hr.*
Accounting 51 and 52—Principles	6	6
Economics 51 and 52—Principles	6	6
Economics 111—Money and Banking	3	3
Economics 115—Labor Economics	3	—
Economics 125—Statistics	3	3
Business Law 111—Legal Environment	3	—
Business Law 112—Commercial Law	3	—
Finance 111—Business Finance	3	—
Management 111—Manufacturing	3	—
Marketing 111—Marketing	3	—
TOTAL	36	18

IV. MAJOR REQUIREMENTS

Accounting Majors	*Hr.*
Accounting 111 and 112—Intermediate Accounting	6
Accounting 113—Advanced Accounting	3
Accounting 115—Cost Accounting	3
Accounting 211—Accounting Systems *or* Accounting 217—Auditing Theory	3
Electives—Commerce	9
TOTAL	24

Finance Majors	*Hr.*
Economics 241—Public Finance	3
Finance 112—Financial Management	3
Finance 150—Investments	3
Management 225—Business Policy	3
Electives—Commerce	12
TOTAL	24

Industrial Management Majors	*Hr.*
Accounting 115—Cost Accounting	3
Management 112—Production Planning and Control	3
Management 216—Personnel Management	3
Management 225—Business Policy	3
Electives—Commerce	12
TOTAL	24

Marketing Majors	*Hr.*
Marketing 112—Marketing Management	3
Marketing 120—Advertising	3
Marketing 215—Marketing Research	3
Management 225—Business Policy	3
Electives—Commerce	12
TOTAL	24

Economics Majors	*Hr.*
Economics 211—Micro Economic Analysis	3
Economics 212—Macro Economic Analysis	3
Economics 222—History of Economic Thought	3
Economics 241—Public Finance	3
Electives—Economics	9
Electives—Business Administration	9
Electives—Economics or Business	6
TOTAL	36

SUBSTITUTIONS FOR REQUIRED COURSES

Any substitution of another course for a required course must be approved in writing by the Dean of the College of Commerce.

SECOND BACHELOR'S DEGREE

A student who has received a Bachelor's Degree from an approved college or university may become eligible for a second Bachelor's Degree by earning a minimum of 30 semester hours of credit, which shall include all the courses in the Commerce Core and such other courses as the Dean may prescribe.

College Regulations

ATTENDANCE AT COMMENCEMENT

Candidates for degrees to be conferred at the close of the second semester must be present in person to receive their diplomas unless excused by the Dean. No individual may be exempted from the provisions of this University regulation, except by official action of the Board of Governors of the University.

MAXIMUM AND MINIMUM COURSE LOAD

The maximum course load for students in the College of Commerce is 18 hours a semester unless the student's grade-point average is 3.0 (B) or above in the preceding semester, in which case he may schedule not more than 20 semester hours. The minimum course load for a full-time student is 14 hours a semester. Students desiring to schedule more than 18 hours or less than 14 hours should submit a petition to the Scholarship Committee which must approve all exceptions to these regulations.

WORK TAKEN AT OTHER INSTITUTIONS

Students who expect to obtain a degree from the College of Commerce and who wish to take work at other institutions must have their programs approved by the Dean of the College of Commerce before registering at another institution of higher learning. Ordinarily required courses must be taken at West Virginia University.

LATE REGISTRATION

Students will not be permitted to enroll in a College of Commerce course after the eighteenth day of the semester or the ninth day of the Summer Session without the Dean's permission, the first day being defined here as the initial day of upper-division registration.

WITHDRAWAL FROM COURSES

Students registered in the College of Commerce will not be permitted to withdraw from courses after the eighteenth day of each semester or the ninth day of the Summer Session, the first day being defined here as the initial day of upper-division registration.

Students will not be permitted to withdraw from a required lower-division course while enrolled in upper-division courses.

ABSENCES

Each instructor shall be responsible for the attendance of students in his classes and shall report an excessive number of absences to the Dean of the College for such action as may be deemed advisable.

University students who find it necessary to be absent from classes by reason of absence from Morgantown while the University is in session must obtain permission

in advance from the Dean, and in case of University women, from the Dean of Women also.

If a student's absences in any course exceed 12 per cent of the total number of recitations in the course, he may be barred from taking the final examination.

If a student's absences in any course exceed 25 per cent of the total number of meetings, or he is absent from all the class meetings during 14 calendar days immediately preceding the period set for final examinations, he may be considered to have withdrawn irregularly from the course and be given a grade of "F."

PROBATION AND SUSPENSION

Any student who fails to make a passing grade in courses amounting to at least half of the total number of semester hours for which he is registered, at the end of the second week following the date set for mid-semester reports, shall be placed on probation for the remainder of the semester.

Any student enrolled in the College of Commerce whose cumulative grade-point average falls below 2.0 shall be placed on academic probation. If, while on probation, a student increases his grade-point deficiency at the end of any semester or term, he shall be suspended. A student shall also be suspended if he fails to achieve a 2.0 cumulative average within two semesters in residence after having been placed on probation.

Any student who at the end of any registration period fails to make a passing grade in courses amounting to at least half the total number of semester hours for which he is registered shall be suspended from the University.

A student who without permission withdraws from the University or from any class for which he is registered shall, unless restored to probationary standing, be suspended from the University.

If a student suspended by operation of one of the foregoing rules re-enters the University and again becomes subject to it, his suspension becomes indefinite.

General Information

ADVISERS

Freshman and sophomore students are assigned to Pre-Commerce advisers in the College of Arts and Sciences. Students entering the College of Commerce are assigned to an appropriate adviser in the college according to the major program selected by the student. Every student's program of study must be approved by his adviser.

DEAN'S HONOR LIST

At the end of each semester, the Dean of the College of Commerce will compile and release for publication a list of those students who attained a grade-point average of 3.3 or higher on a total load of 14 or more credit hours during that semester.

STUDENT ORGANIZATIONS

Beta Gamma Sigma, national scholarship society in commerce and business administration, is represented in the College of Commerce by the Alpha of West Virginia Chapter. Eligibility for membership is restricted to the highest 4 per cent of the junior class, the highest 10 per cent of the senior class, and the highest 20 per cent of the graduate students.

Alpha Kappa Psi, professional business fraternity, has as its objectives the encouragement of scholarship, the fostering of close relationships between men in the business world and students in the College of Commerce, and the promotion of a varied program of activities which will supplement classroom training for careers in business.

Student societies in specialized fields of commerce include *Beta Alpha Psi,* national professional accounting fraternity; *Omicron Delta Epsilon,* national eco-

nomics fraternity; the *Society for the Advancement of Management*, affiliated with the national organization bearing the same name; and the *Marketing Club*.

PLACEMENT OF GRADUATES

The placement committee in the College as well as all staff members will aid qualified graduates to find desirable employment. Graduates have access to the University Placement Service, which serves graduating seniors and alumni.

Recommended Programs of Study

PRE-COMMERCE PROGRAM

Pre-Commerce students are expected to complete the Pre-Commerce program of study within their first two years of residence at the University. It is particularly important that Economics 51 and 52 be completed during the sophomore year since these courses are prerequisite for all upper-division courses in the College of Commerce.

Students must observe the University Core Curriculum Requirements as to distribution of elective courses. During the four years, in addition to the required courses listed herein, the student must complete 12 hours of Group A electives, 6 hours of Group B electives (other than Economics), and 9 hours of Group C electives from the list of approved elective courses. These may be lower-division or upper-division courses, the only requirement being that the student must earn at least 60 hours of credit in upper-division courses (numbered 100 or higher).

FRESHMAN YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
English 1—Composition	3	English 2—Composition	3
Math. 3—College Algebra	3	Pol. Sci. 2—American Fed. System	3
Psychol. 1 or Sociol. 1	3	Sociol. 1 or Psychol. 1	3
Mil. or Air Sci. 1—Men[1]	2	Mil. or Air Sci. 2—Men[1]	2
Phys. Educ.—Men and Women[1]	1	Phys. Educ.—Men and Women[1]	1
Electives—Core Group C[2]	3-4	Electives—Core Group C[2]	3-4
Electives—Women	1	Electives—Core Group A[2]	3
TOTAL—MEN	15-16	TOTAL—MEN	18-19
TOTAL—WOMEN	14-15	TOTAL—WOMEN	16-17

SOPHOMORE YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Acctg. 51—Principles	3	Acctg. 52—Principles	3
Econ. 51—Principles	3	Econ. 52—Principles	3
English 18—Adv. Composition *or* Speech 11—Oral Communication	3	Speech 11—Oral Communication *or* English 18—Adv. Composition	3
Mil. or Air Sci. 3—Men[1]	2	Mil. or Air Sci. 4—Men[1]	2
Phys. Educ.—Women[1]	1	Phys. Educ.—Women[1]	1
Electives—Core Group A[2]	3	Electives—Core Group A[2]	3
Electives—Core Group C[2]	3	Electives—Men	4
		Electives—Women	3
TOTAL—MEN	17	TOTAL—MEN	18
TOTAL—WOMEN	16	TOTAL—WOMEN	16

[1]A minimum of 124 hours of credit must be earned in subjects other than required Physical Education, required Military or Air Science, English 0, and Math. 2.

[2]Students must observe the University Core Curriculum Requirements as to distribution of elective courses. During the four years, in addition to the required courses, the student must complete 12 hours of Group A electives, 6 hours of Group B electives, and 9 hours of Group C electives from the list of approved electives.

B.S. IN BUSINESS ADMINISTRATION PROGRAMS

Accounting

The accounting program is designed to prepare students for public accounting and for positions as accountants in business, industry, and government.

JUNIOR YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Acctg. 111—Intermediate Accounting	3	Acctg. 112—Intermediate Acctg.	3
Acctg. 115—Cost Accounting	3	Bus. Law 112—Commercial Law	3
Bus. Law 111—Legal Environment	3	Econ. 125—Statistics	3
English 123—Business English	3	Mgmt. 111—Manufacturing	3
Finance 111—Business Finance	3	Mrkt. 111—Marketing	3
Electives—Non-Commerce	3	Electives—Non-Commerce	3
TOTAL	18	TOTAL	18

SENIOR YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Acctg. 211—Acctg. Systems (or Acctg. 217—Auditing Theory 2nd Sem.)	3	Acctg. 113—Advanced Acctg.	3
Econ. 111—Money and Banking	3	Econ. 115—Labor Economics	3
Electives—Commerce	6	Electives—Commerce	3
Electives—Non-Commerce	3	Electives—Non-Commerce	3
		Electives—Unrestricted	3
TOTAL	15	TOTAL	15

Finance

This program is designed to meet the needs of those students who plan to enter government service or to become associated with the financial or insurance departments of banks, commercial firms, and industrial organizations.

JUNIOR YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Bus. Law 111—Legal Environment	3	Bus. Law 112—Commercial Law	3
Econ. 111—Money and Banking	3	Econ. 125—Statistics	3
English 123—Business English	3	Finance 112—Financial Mgmt.	3
Finance 111—Business Finance	3	Mgmt. 111—Manufacturing	3
Electives—Commerce	3	Mrkt. 111—Marketing	3
Electives—Non-Commerce	3	Electives—Non-Commerce	3
TOTAL	18	TOTAL	18

SENIOR YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Econ. 241—Public Finance	3	Econ. 115—Labor Economics	3
Finance 150—Investments	3	Mgmt. 225—Business Policy	3
Electives—Commerce	6	Electives—Commerce	3
Electives—Non-Commerce	3	Electives—Non-Commerce	3
		Electives—Unrestricted	3
TOTAL	15	TOTAL	15

Industrial Management

This program is designed to prepare students for positions in industrial management, especially those in production and industrial relations. Although it does not provide technical training, it does provide a foundation upon which specialized training can be developed.

JUNIOR YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Bus. Law 111—Legal Environment	3	Bus. Law 112—Commercial Law	3
Econ. 125—Statistics	3	Acctg. 115—Cost Accounting	3
Mgmt. 111—Manufacturing	3	English 123—Business English	3
Mrkt. 111—Marketing	3	Finance 111—Business Finance	3
Electives—Commerce	3	Mgmt. 112—Prodn. Plan. & Control	3
Electives—Non-Commerce	3	Electives—Non-Commerce	3
TOTAL	18	TOTAL	18

SENIOR YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Econ. 115—Labor Economics	3	Econ. 111—Money and Banking	3
Mgmt. 216—Personnel Mgmt.	3	Mgmt. 225—Business Policy	3
Electives—Commerce	6	Electives—Commerce	3
Electives—Non-Commerce	3	Electives—Non-Commerce	3
		Electives—Unrestricted	3
TOTAL	15	TOTAL	15

Marketing

The marketing program is designed to prepare students for careers in the field of distribution, at the manufacturing, wholesaling, or retailing level.

JUNIOR YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Bus. Law 111—Legal Environment	3	Bus. Law 112—Commercial Law	3
Econ. 125—Statistics	3	Econ. 111—Money and Banking	3
Mgmt. 111—Manufacturing	3	English 123—Business English	3
Mrkt. 111—Marketing	3	Finance 111—Business Finance	3
Electives—Commerce	3	Mrkt. 112—Marketing Mgmt.	3
Electives—Non-Commerce	3	Electives—Non-Commerce	3
TOTAL	18	TOTAL	18

SENIOR YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Econ. 115—Labor Economics	3	Mrkt. 215—Marketing Research	3
Mrkt. 120—Advertising	3	Mgmt. 225—Business Policy	3
Electives—Commerce	6	Electives—Commerce	3
Electives—Non-Commerce	3	Electives—Non-Commerce	3
		Electives—Unrestricted	3
TOTAL	15	TOTAL	15

B.S. IN ECONOMICS PROGRAM

The economics program is designed for those who wish to emphasize economics in their education for a business career, for those who wish to undertake graduate work for an advanced degree in this field, and for those who wish to enter government service.

JUNIOR YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Econ. 111—Money and Banking	3	Econ. 212—Macro Econ. Analysis	3
Econ. 125—Statistics	3	Electives—Business	3
Econ. 211—Micro Econ. Analysis	3	Electives—Economics	6
Electives—Business	3	Electives—Non-Commerce	6
Electives—Non-Commerce	6		
TOTAL	18	TOTAL	18

SENIOR YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Econ. 241—Public Finance	3	Econ. 222—Hist. of Econ. Thought	3
Electives—Business	3	Electives—Business or Economics	3
Electives—Economics	3	Electives—Non-Commerce	3
Electives—Business or Economics	3	Electives—Unrestricted	6
Electives—Non-Commerce	3		
TOTAL	15	TOTAL	15

Courses of Instruction

ACCOUNTING*

51. Principles of Accounting. I, II. 3 hr. PR: Sophomore standing. The fundamentals of accounting for business enterprises: the accounting cycle, journals and ledgers, working papers, statements.

52. Principles of Accounting. I, II. 3 hr. PR: Accounting 51. Further study of the accounting process with emphasis on assets, liabilities, and net worth; manufacturing accounts; analysis of financial statements.

111. Intermediate Accounting. I. 3 hr. PR: Accounting 52. Analysis of accounting theory and practice as applied to business firms; assets valuation, liabilities, income determination.

112. Intermediate Accounting. II. 3 hr. PR: Accounting 111. A continuation of Accounting 111.

113. Advanced Accounting. II. 3 hr. PR: Accounting 112. Accounting for partnerships, consolidations, installment sales, consignments, receiverships, reorganizations, branches, foreign exchange, and estates and trusts.

115. Cost Accounting. I, II. 3 hr. PR: Accounting 52. Fundamentals of cost determination with emphasis on the significance of cost data and their interpretation; process, job-order, and standard costs.

211. Accounting Systems. I. 3 hr. PR: Accounting 112. The adaption of accounting procedures to the demands of the firm, with emphasis on theoretical factors important to efficiency and internal control; system surveys and reports, the design of forms, office machine applications.

213. Income Tax Accounting. I. 3 hr. PR: Accounting 112 or consent. Tax theory and practice as developed from the regulations of the Internal Revenue Service; problems in preparation of tax returns for individuals, partnerships, and corporations.

*Economics 52 is a prerequisite for all upper-division courses.

214. Income Tax Accounting. II. 3 hr. PR: Accounting 213. A continuation of Accounting 213.

216. Advanced Cost Accounting. II. 3 hr. PR: Accounting 115. Advanced work in the application of cost theory and procedures to cases and problems, which emphasize the managerial use of cost information.

217. Auditing Theory. I or II. 3 hr. PR: Accounting 112. Auditing fundamentals; objectives, standards and procedures; introduction to working-paper techniques; procedure statements of the American Institute of CPA's.

218. Auditing Practice. I or II. 3 hr. PR: Accounting 217. Application of auditing theory and procedures, with emphasis on decisions which invoke judgment and are important in independent audits; audit working papers and reports; case studies.

224. Advanced Accounting Problems. I or II. 3 hr. PR: Minimum of 18 hours in accounting with an average grade of "B" or higher. Analysis and solution of representative CPA problems.

230. Advanced Accounting Theory. I or II. 3 hr. PR: Accounting 112, 115, and consent. A critical analysis of accounting concepts and standards with emphasis on their origin, development, and significance.

BUSINESS LAW*

111. Legal Environment of Business. I, II. 3 hr. The nature of law and the judicial system. The relationship of law, ethics, and cultural values to business enterprise. Substantive law of contracts, sales, and credit transactions and the social and economic consequences of court decisions.

112. Commercial Law. I, II. 3 hr. PR: Business Law 111. Substantive law of agency, partnerships, corporations, negotiable instruments, and property and their social and economic functions.

ECONOMICS*

51. Principles of Economics. I, II. 3 hr. PR: Sophomore standing. Principles of resource allocation, income, output and price determination under different competitive conditions; money, banking, and monetary policy; national income, employment, and fiscal policy; taxation and government spending; international economics, underdeveloped areas, and comparative economic systems.

52. Principles of Economics. I, II. 3 hr. PR: Economics 51. A continuation of Economics 51.

111. Money and Banking. I, II. 3 hr. Our system of monetary and banking arrangements, viewed in relation to functioning of the economic system as a whole.

115. Labor Economics. I, II. 3 hr. An introduction to labor economics and labor relations in industry, including the interaction of economic forces, union policies, personnel practices, and labor law.

125. Statistics. I, II. 3 hr. PR: Math. 2 or 3. Basic statistical methods employed in collection, presentation, analysis, and interpretation of business and economic data such as analysis of frequency distributions, time series, inference, index numbers, and correlation.

205. Current Economic Problems. S. 3 hr. PR: Economics 1 and 2 or consent. For students in Education only. A course designed to acquaint public school teachers with reliable source material in economics and to instruct them in studying current economic problems.

*Economics 52 is a prerequisite for all upper-division courses.

210. Comparative Economic Systems. I or II. 3 hr. Structure and processes of existing economic systems throughout the world including review of basic principles of free enterprise, socialistic, communistic, and fascistic societies. Comprehensive analysis based on current and recent experiments in these economies.

211. Micro Economic Analysis. I. 3 hr. A study of price and output determination and resource allocation in the firm under various competitive conditions.

212. Macro Economic Analysis. II. 3 hr. An analysis of the forces which determine the level of income, employment, and output. Particular attention is given to consumer behavior, investment determination, and government fiscal policy.

217. Trade Unionism. I or II. 3 hr. PR: Economics 115 or consent. An analysis of the structure, government, attitudes, and policies of organized labor; the implications of union policy.

218. Collective Bargaining. I or II. 3 hr. PR: Economics 115 or consent. Theory and practice of collective bargaining; including contract issues, types of relationships, and the role of government policy.

219. Economics of Wages. I or II. 3 hr. PR: Economics 115 or consent. The determination of wage levels and structure; the functioning and organization of labor markets.

220. Introduction to Quantitative Analysis. I. or II. 3 hr. PR: Economics 125. Study of the principal mathematical techniques employed in economic analysis; an introduction to econometrics.

222. History of Economic Thought. II. 3 hr. Economic ideas in perspective of historic development.

225. Transportation. I. 3 hr. Development of an inland transportation system and relations and policies of transport agencies.

230. Public Utilities. II. 3 hr. Development of regulation; economics of valuation and rate making.

235. Economic Growth and Fluctuations. I or II. 3 hr. PR: Economics 125 or consent. Industrial fluctuations; causes and possible remedies.

241. Public Finance. I. 3 hr. Governmental fiscal organizations and policy; taxes and tax systems with particular emphasis upon the Federal Government and the State of West Virginia.

245. Government and Business. I or II. 3 hr. Government in its role of adviser and umpire; analysis of governmental policies and practices affecting business.

250. International Economics. I or II. 3 hr. Development of trade among nations; theories of trade; policies, physical factors, trends, and barriers in international economics.

251. Economic Development. I or II. 3 hr. A comprehensive study of the problems, changes, and principal policy issues faced by non-industrialized countries in the process of economic development.

255. Regional Economics. I or II. 3 hr. An analysis of the factors that promote or deter the economic growth of a region, with emphasis on such matters as population shifts, economic base studies, industrial location analyses, input-output techniques, regional income estimation, local multiplier and cycle concepts, and the role of government in regional growth.

256. Advanced Statistics. II. 3 hr. PR: Economics 125 or equiv. An advanced approach to statistical analysis with emphasis on probability, inference, and multi-varied statistical techniques.

FINANCE*

111. Business Finance. I, II. 3 hr. PR: Accounting 51 and 52 or consent. A study of the activities of the finance manager in the planning, acquisition, and administration of funds used in a business enterprise.

112. Financial Management. II. 3 hr. PR: Finance 111. Application of fundamentals and theory to the analysis of cases in business finance.

115. General Insurance. I, II. 3 hr. Theory of risk and its application to insurance; principles underlying all forms of insurance—life, property, casualty, fire, and surety.

120. Life Insurance. I. 3 hr. PR: Finance 115. Principles of life-insurance protection; legal regulation of insurance companies.

150. Investments. I. 3 hr. PR: Finance 111 or consent. Investment analysis and management for the individual and the financial institution.

161. Real Estate. II. 3 hr. Principles and practices of real estate business.

216. Risk Management. II. 3 hr. PR: Finance 115 or consent. A study of the transferable risks with which the enterpreneur must deal. Emphasis is on the process by which decisions are made for the handling of these risks, including an examination of the contributions and limitations of the insurance system.

MANAGEMENT*

105. Management Process. I, II. 3 hr. A study of management as a process comprised of the functions of planning, organizing, directing, and controlling business activities. Emphasis is placed on management as a rational, orderly, intellectual process for making resources productive.

111. Manufacturing. I, II. 3 hr. A survey of the important activities of the manufacturing function including organization, economic limitations affecting manufacturing, and control systems and analytical tools used by manufacturing managers.

112. Production Planning and Control. II. 3 hr. PR: Management 111. The management of manufacturing and production activities with emphasis on their coordination and control to achieve production goals.

213. Problems in Business Administration. I or II. 1-3 hr.

216. Personnel Management. I, II. 3 hr. Principles and practices in the direction, coordination, and remuneration of manpower.

225. Business Policy. I, II. 3 hr. PR: Completion of the Commerce Core Courses. Integrated study of policies, organization, facilities, and control techniques of business enterprises.

MARKETING*

111. Marketing. I, II. 3 hr. Analysis of those activities through which business firms direct the flow of their goods and services to consumers and users.

112. Marketing Management. II. 3 hr. PR: Marketing 111. The application of fundamentals and theory to the analysis of marketing cases and the development of marketing strategies.

115. Retailing. II. 3 hr. PR: Marketing 111. Management of retailing establishments, with emphasis on organization, merchandising, buying, sales promotion, customer services, and control of operations.

*Economics 52 is a prerequisite for all upper-division courses.

120. Advertising. I, II. 3 hr. PR: Marketing 111 and 112. Introduction to principles and practices of advertising, including preparation of a complete advertising campaign.

210. Industrial Purchasing. I. 3 hr. PR: Marketing 111. A survey of corporate procurement problems facing modern purchasing executives.

215. Marketing Research. II. 3 hr. PR: Marketing 111. The utilization of present-day marketing research techniques in the solution of practical marketing problems, with particular reference to West Virginia.

The Creative Arts Center

FACULTY

Division of Music

Richard Edward Duncan, *Dean and Director of Creative Arts Center; Professor of Music.* (1964), 1958. B.M., Ph.D., Eastman School of Music of the University of Rochester; M.A., Ohio State University.

Clifford Woodrow Brown, *Assistant Dean of Creative Arts Center; Professor of Music.* (1964), 1942. B.S., West Virginia University; M.F.A., Carnegie Institute of Technology.

Francis Thomas Borkowski, *Assistant Professor of Music. Clarinet, Director of Bands.* (1962), 1961. B.M.E., Oberlin Conservatory; M.M., Indiana University.

Kay Kaiser Borkowski, *Instructor* (part-time) *in Music. Flute.* (1963). B.M., Indiana University.

Thomas Scribner Canning, *Associate Professor of Music, Composition, Theory.* (1963). B.M., Oberlin Conservatory; M.M., Eastman School of Music of the University of Rochester.

Walter Lee Coplin, *Assistant Professor of Music. String Bass, Instrument Classes.* (1952), 1947. B.M., Oberlin Conservatory; M.M., West Virginia University.

Arno Paul Drucker, *Assistant Professor of Music and Chairman of the Applied Music Department. Piano.* (1962), 1959. B.M., M.M., Eastman School of Music of the University of Rochester. Akademie für Musik, Vienna; Mozarteum, Salzburg.

Ruth Landes Drucker, *Instructor* (part-time) *in Music. Voice.* (1961). B.M., M.M., Eastman School of Music of the University of Rochester; Akademie für Musik, Vienna; Mozarteum, Salzburg.

Jon Evan Engberg, *Assistant Professor of Music. Violoncello, Theory.* (1963), 1959. B.M., M.M., Eastman School of Music of the University of Rochester.

Clyde Neville English, *Associate Professor of Music, Organ, Church Music.* (1953), 1945. B.A., Carnegie Institute of Technology; M.S.M., D.S.M., School of Sacred Music, Union Theological Seminary.

Philip James Faini, *Instructor in Music. Percussion, Theory.* (1961). B.M., West Virginia University.

Reginald Hedges Fink, *Assistant Professor of Music. Brass Instruments, Theory.* (1962). B.M., Eastman School of Music of the University of Rochester; M.M., University of Oklahoma.

Mary Jane Glasscock, *Instructor in Education, Music Education.* (1947), 1943. B.M., M.M., West Virginia University.

Herman Godes, *Professor of Music. Piano.* (1964), 1960. M.M., Latvian State Music Academy. Student of Walter Gieseking and Robert Casadesus.

Joseph Arnold Golz, *Associate Professor of Music. Director of Opera Department and Choral Organizations.* (1959). B.S., State Teachers College of New Jersey; M.A., Columbia University.

Leo Horacek, *Associate Professor of Music and Chairman of the Department of Music Education.* Music Education. (1964), 1960. B.M.E., B.M., M.M.E., Ph.D., University of Kansas.

Barton Hudson, *Assistant Professor of Music. Musicology.* (1964). B.M., Midwestern University; M.M., Ph.D., Indiana University.

Bonnie Geoy Joehnk, *Instructor in Music. Piano.* (1962). B.M., Cornell College; M.M., Northwestern University.

Gerald Lefkoff, *Assistant Professor of Music. Theory, Viola.* (1961). B.S., Juilliard School of Music; M.M., Ph.D., Catholic University of America.

David Lloyd, *Professor of Music. Voice.* (1963). B.M., Minneapolis College of Music; Curtis Institute of Music. New York City Center Opera, NBC Opera Company, Glyndebourne Opera Company, etc., Soloist with all major symphonies.

Frank Edell Lorince, Jr., *Assistant Professor of Music and Acting Chairman of the Department of Theory and Composition. Theory.* (1960), 1950. B.M., Oklahoma City University; M.M., Eastman School of Music of the University of Rochester.

Margaret Scott Lorince, *Instructor* (part-time) *in Music and Chairman of Preparatory Department. Piano.* (1963). B.M., Oklahoma City University; M.M., Eastman School of Music of the University of Rochester.

Elizabeth McEnney, *Assistant Professor of Music. Voice.* (1949). B.M., New England Conservatory of Music; M.M., University of Michigan.

Bernard Ronald McGregor, *Assistant Professor of Music. Voice, Lecturer in Music.* (1950), 1935. B.S.Ed., West Virginia University; M.F.A., Carnegie Institute of Technology.

James Edward Miltenberger, *Instructor in Music. Piano.* (1962). B.M., Miami University; M.M., Eastman School of Music of the University of Rochester.

Jane Rhodes Pestun, *Instructor in Music. Piano.* (1945), 1942. B.M., M.M., West Virginia University.

Donald Charles Portnoy, *Assistant Professor of Music. Violin, Director of the Symphony Orchestra and Director of Summer Music Camp.* (1962), 1959. B.S., Juilliard School of Music; M.A., Catholic University of America.

George Etheridge Schafer, *Professor of Music and Chairman of Graduate Studies; Lecturer in Music.* (1962), 1954. B.M., University of Wisconsin; M.M., Ph.D., Eastman School of Music of the University of Rochester.

Stephanie Shehatovich, *Instructor in Music—University Extension. Piano.* (1960). Pupil of Isador Philipp, Emil van Sauer, and Wanda Landowska.

Roger Clark Sherman, *Instructor in Music. Trumpet.* (1964). B.M., Eastman School of Music of the University of Rochester.

Edward Sprague, *Assistant Professor of Music—University Extension.* (1964), 1962. B.S.M.Ed., Fredonia State Teachers College; M.S., Syracuse University.

Forrest Wells Standley, *Instructor* (part-time) *in Music. French Horn.* (1963). Institute of Musical Art, Juilliard Graduate School. Solo French Horn with N.B.C. Symphony, New York City Center Opera, Ballet Theatre.

Ronald Scott Stringham, *Assistant Professor of Music. Music Education, Lecturer in Music.* (1964). B.M., St. Olaf College; M.A., Ph.D., Cornell University.

Rudd Allen Udell, *Instructor in Music. Double Reeds, Director of Marching Band.* (1963). B.M., M.M.E., Indiana University.

Kenneth Wood, *Associate Professor of Music. Theory, Lecturer in Music.* (1941), 1928. B.M., M.M., Syracuse University.

Division of Art

John Donald Clarkson, *Professor and Chairman of Art.* (1964), 1948. B.F.A., Carnegie Institute of Technology; M.A., University of Pittsburgh.

Jo Mather Aull, *Instructor* (part-time) *in Art.* (1945). Diploma, Cooper Union.

Barbara Adeline Drainer, *Associate Professor of Art.* (1964), 1952. B.A., Fairmont State College; M.A., Ed.D., Columbia University.

Ben Frank Freedman, *Assistant Professor of Art.* (1962), 1957. B.F.A., Washington University, St. Louis; M.A., University of Arizona.

Joe Francis Moss, *Assistant Professor of Art.* (1964), 1960. A.B., M.A., West Virginia University.

Charles Edwin Patton, *Professor of Art.* (1951), 1939. A.M., Western Reserve University.

Division of Drama

Sam Boyd, Jr., *Professor and Chairman of Drama.* (1964), 1943. B.F.A., M.F.A., Carnegie Institute of Technology.

Larry Dean Augustine, *Instructor in Drama.* (1964). A.B., M.A., West Virginia University.

Robert Barker Burrows, *Professor of Drama; Director of Design.* (1963), 1948. B.A., University of Puget Sound; M.A., University of Washington; Ph.D., Ohio State University.

Joe Edward Ford, *Assistant Professor of Drama. Technical Theatre; Director of West Virginia High School Drama Festival.* (1962), 1953. A.B., Alderson-Broaddus College; M.A., West Virginia University.

Joe Vernon Graber, *Instructor in Drama.* (1965). A.B., Georgetown College; M.A., M.F.A., Western Reserve University.

LENNETTE MAY HARDIN, *Instructor in Drama. Oral Interpretation.* (1959). A.B., M.A., West Virginia University.
JAMES ARLIN HAWKINS, *Instructor in Drama.* (1965). B.A., M.A., Sacramento State College.
CHARLES DAVID NEEL, *Instructor in Drama; Studio Theatre Supervisor.* (1960). B.A., M.A., West Virginia University.

THE CREATIVE ARTS

Music, art, and drama are testaments to man's desire to express himself and his society and to seek personal growth and creative satisfaction.

The goal of the Creative Arts Center is truly professional education of the highest order under the guidance of outstanding artists, performers, and inspired educators. This education is both for the performing and creative student as well as the student preparing for a teaching career in elementary, secondary, or higher educational institutions. Construction on the new multi-million dollar Creative Arts Center building is scheduled to begin during the summer of 1965. This new facility, to be completed in 1967, will provide one of the finest structures and the most modern equipment available for music, art, and drama.

AREAS OF SPECIALIZATION

MUSIC

1. *Applied Music* is designed for the student wishing to concentrate on performing or teaching a particular instrument.
2. *Music Education* prepares the student to teach vocal or instrumental music in the elementary and secondary schools.
3. *Theory and Composition* prepares the composer and the student wishing to teach theory and composition.

ART

1. *Studio Art* is designed for technical training and the history of art.
2. *Art Education* is designed to prepare the student to teach art in the elementary and secondary schools.

DRAMA

1. *Acting-Directing* prepares the student for a career in acting (stage, television, motion pictures) or in directing plays for the commercial and educational theater.
2. *Scene Design and Technical Theater* trains the student in the principles of designing scenery, lighting, and costumes. Ample opportunity is provided for gaining practical experience in technical theatre production.

PRE-UNIVERSITY PREPARATION

MUSIC

The student should become as proficient as possible in his major performance area. He should also try to obtain rudimentary skills in piano and theory. High school courses in History or Appreciation of Music, or outside readings in this area, will be of great value to the student.

ART

The student should take all the courses in art available in his community. He should also visit as many art gallerys and art displays as possible. High school courses in history or appreciation of art, or outside readings in this area, will be of great value to the student.

Drama

The student should participate in as many productions as possible, both as an actor and as a member of the technical staff. He should attend as many live performances as are available to him. Through outside readings, he should acquaint himself with outstanding plays, production techniques, and history of the theater.

INTER-DIVISIONAL COMMITTEES

Inter-Divisional Curriculum Committee: Professor Boyd, *Chairman;* Professors Brown and Clarkson; Associate Professor Horacek; Assistant Professor Drucker; Instructors Moss and Neel.

Inter-Divisional Committee on Graduate Studies: Professor Schafer, *Chairman;* Professors Boyd, Burrows, Clarkson, and Patton; Associate Professor Horacek.

Alumni Association: Assistant Professor McGregor, *Chairman;* Professors Burrows and Patton; Associate Professor Drainer; Assistant Professors Coplin and Ford.

The Division of Music

OBJECTIVE

The Division of Music offers truly professional education of the highest order by outstanding performers and inspired educators for the performing and creative student and for the student preparing for a teaching career in elementary, secondary, or higher educational institutions.

PURPOSES

The Division of Music:

1. Offers professional preparation in the fields of instrumental and vocal performance, musical composition, church music, and lyric theatre.
2. Provides the necessary musical skills for the future music educators of the country.
3. Offers opportunities for students in all departments of the University to participate in musical activities and become conscious of the general cultural value of music.
4. Provides professional instruction for the talented young musicians of pre-university age.
5. Provides the facilities and staff to stimulate scholarly research.
6. Stimulates continuing education in music throughout the State in cooperation with the University Extension Division.
7. Serves the University, State, and area by student and faculty presentations of lectures, workshops and clinics, concerts, recitals, and opera productions.

General Information and Degree Requirements

The Division of Music is a member of the National Association of Schools of Music. The requirements for entrance and for graduation as set forth on page 226 are in accordance with the published regulations of that organization. The Music Education Program offered in the Division of Music is fully accredited by the National Council for Accreditation of Teacher Education.

The Division of Music is housed in a magnificent air-conditioned building. Constructed at a cost of over a million dollars, the building is completely modern in every respect, with special attention having been given to the acoustical problems.

Included among its facilities are 26 teaching studios, 30 practice rooms, band and orchestral rehearsal room, classrooms, library, listening rooms, recital hall, dressing rooms, projection and recording room, and administrative offices.

The faculty consists of 35 artist-teachers and 10 graduate assistants. Each member was carefully selected because his musical background combined inspired teaching with outstanding experience as a professional performer.

The performing groups maintained by the Division of Music are a symphony orchestra, four bands, three choruses, opera department, the American Arts Trio, and numerous student chamber music ensembles. Many concerts are given throughout the year by the Division of Music, and, in addition, a number of outstanding concerts are provided by the University Artists Series. Morgantown's close proximity to Pittsburgh makes that city's musical events available to University students.

MUSICAL ORGANIZATIONS

Remission of Fees in Band or Orchestra

After completing two years in the band or orchestra, especially qualified members of these organizations may continue service in them upon invitation and receive allowances in the form of remission of fees amounting to $30.00 per semester.

UNIVERSITY SYMPHONY ORCHESTRA

The *University Symphony Orchestra* is open to all students, faculty members, and citizens of the community who are proficient in the playing of an orchestral instrument. The repertoire is that of the standard symphony orchestra, with special emphasis on contemporary American music.

The functions of the orchestra are to provide the University and community an opportunity to hear symphonic music, to enable the student to gain orchestral experience, and to serve as a laboratory for student composers, orchestrators, and conductors.

Rehearsals are held each Wednesday evening at 7:30 o'clock in the Music Building. May be taken with or without 1 hour credit as Music 103.

UNIVERSITY CHORAL ORGANIZATIONS

The *University Choirs* are open to all students in the University. Personnel are selected by audition. These choirs rehearse three times per week. May be taken with or without 1 hour credit as Music 105.

The *University Choral Union* is open to all University students who can satisfactorily sing a part. This organization offers opportunity to participate in the performance of major choral works. May be taken with or without 1 hour credit as Music 102.

UNIVERSITY BANDS

The University Bands are composed of three units: the Mountaineer Marching Band, the Concert Band, and the Wind Symphony. Membership is open to men and women in all classes of the various schools, divisions, and colleges in the University.

The *Mountaineer Marching Band* is traditionally a men's organization and is active during the football season. The *Concert Band* is organized at the conclusion of football season and presents a spring concert and a traditional outdoor concert during Greater West Virginia Weekend. The *Wind Symphony* presents formal concerts on campus throughout the year. May be taken with or without 1 hour credit as Music 100.

STUDENT ORGANIZATIONS

The Division of Music sponsors Epsilon Nu chapter of *Mu Phi Epsilon*, Epsilon Sigma chapter of *Phi Mu Alpha*, and a student chapter of the *Music Educators National Conference*.

DIVISION OF MUSIC COMMITTEES

Scholarship: Assistant Professor McGregor, *Chairman;* Professor Schafer; Assistant Professors Coplin, Drucker, Engberg, and Lorince.

Curriculum: Associate Professor Horacek, *Chairman;* Assistant Professors Engberg, Fink, Lefkoff, Lorince, McGregor, and Stringham.

Board of Governors Scholarships: Assistant Professor DRUCKER, *Chairman;* Associate Professor GOLZ; Assistant Professors BORKOWSKI, FINK, and PORTNOY; Instructor FAINI.

Graduate Studies: Professor SCHAFER, *Chairman;* Associate Professors CANNING and HORACEK; Assistant Professors HUDSON, LEFKOFF, and LORINCE.

THE BACHELOR OF MUSIC DEGREE

The Bachelor of Music Degree is conferred upon any student who complies with the general regulations of the University concerning degrees, satisfies all entrance and departmental requirements,[1] and completes one of the following curricula in music with an average of two grade-points per semester hour:[2]

A. Piano, pipe-organ, band or orchestral instruments.
B. Theory and Composition.
C. Music Education.

A freshman student who has less than a 1.0 (D) grade-point average at the close of his second semester is automatically suspended from the Division of Music. A freshman who has less than a 1.5 grade-point average at the close of his second semester is automatically placed on probation for the following semester. The terms of probation will be determined by the Scholarship Committee.

For admission to the junior year in the Division of Music, a student must have established a 2.0 (C) grade-point average.

Transfer students must establish transfer credit from other institutions during the first semester in which they are enrolled in the Division of Music.

Before graduation, all candidates for the degree of Bachelor of Music majoring in Applied Music must have three credits in public performances. All candidates for the degree of Bachelor of Music majoring in Music Education and Theory and Composition must have two credits in public performances. These credits will be granted on the following basis: one credit for each solo performance; one-half credit for each ensemble performance or each accompaniment on piano or organ of major length and difficulty. All but one of the required credits must be achieved by solo performances.

All music majors are required to participate not less than two clock hours per week in a major performing group.

The student is responsible for correctly fulfilling all requirements. Each student should review his course requirements both before and after every registration period so that errors or omissions will be detected immediately.

[1]See Undergraduate Applied Music Requirements, page 238.

[2]Not more than 10 hours in Orchestra, Bands, and Choruses will be counted toward requirements for graduation. Grade points in excess of 2 hours of credit in choral groups will not be counted towards requirements for graduation of students in Music Education with an instrumental emphasis. Grade points in excess of 2 hours of credit in Orchestra or Bands will not be counted towards requirements for graduation of students in Music Education with choral emphasis. For curricula other than Music Education, not more than 8 hours of Orchestra, Bands, and Choruses will be counted toward requirements for graduation.

APPLIED CURRICULUM—PIANO

Freshman Year	*First Sem.*	*Second Sem.*	*Course Description*
M. 150, Piano	4	4	Piano 7
M. 1, 2	4	4	First-year theory
M. 102 or M. 105	1	1	Musical organization
English 1, 2	3	3	Composition and rhetoric
Biol. or Phys. Sci. 1, 2	4	4	Gen. biol.; intro. gen. course[1]
Phys. Ed.	1	1	
Mil. or Air Sci. 1, 2 (M)	2	2	
	Women 34 hr.		
	Men 38 hr.		
Sophomore Year			
M. 150, Piano	4	4	Piano 8
M. 3, 4	4	4	Second-year theory
M. 140, 141	3	3	History of music
M. 102 or M. 105	1	1	Univ. Chorus; Univ. Choir
M. 155	1	1	Chamber music
Elective	3	3	
Phys. Ed. (W)	1	1	
Mil. or Air Sci. 3, 4 (M)	2	2	
	Women 34 hr.		
	Men 36 hr.		
Junior Year			
M. 150, Piano	4	4	Piano 9
M. 252; 280, 281, 282, or 283	3	3	Form; Survey courses
M. 102 or M. 105	1	1	Univ. Chorus; Univ. Choir
M. 155	1	1	Chamber music
M. 218, 219	1	1	Methods and pedagogy
M. 253, 254	2	2	Counterpoint
Elective	2	2	Music
Art 30; Academic Elective	3	3	Art apprec.;[2] Elective
	Women 34 hr.		
	Men 34 hr.		
Senior Year			
M. 150, Piano	4	4	Piano 10
M. 155	1	1	Chamber music
M. 220, 221	1	1	Repertoire
M. 299	-	2	Recital
M. 102 or M. 105	1	1	Univ. Chorus; Univ. Choir
Elective	4	4	Music
Soc. Sci.	4	4	Intro. gen. course[3]
	Women 32 hr.		
	Men 32 hr.		

Total 134 hr. (Women)

140 hr. (Men)

[1]Or Core Group C elective.
[2]Or Core Group A elective.
[3]Or Core Group B elective.

APPLIED CURRICULUM—ORGAN

Freshman Year	*First Sem.*	*Second Sem.*	*Course Description*
M. 150, Organ	4	4	Organ 7
M. 150, Piano	2	2	Piano 5
M. 1, 2	4	4	First-year theory
M. 102 or M. 105	1	1	Univ. Chorus; Univ. Choir
English 1, 2	3	3	Composition and rhetoric
Biol. or Phys. Sci. 1, 2	4	4	Gen. biol.; Intro. gen. course[1]
Phys. Ed.	1	1	
Mil. or Air Sci. 1, 2 (M)	2	2	
	Women 38 hr.		
	Men 42 hr.		
Sophomore Year			
M. 150, Organ	4	4	Organ 8
M. 150, Piano	2	2	Piano 6
M. 3, 4	4	4	Second-year theory
M. 140, 141	3	3	History of music
M. 102 or M. 105	1	1	Univ. Chorus; Univ. Choir
Elective	3	3	
Phys. Ed. (W)	1	1	
Mil. or Air Sci. 3, 4 (M)	2	2	
	Women 36 hr.		
	Men 38 hr.		
Junior Year			
M. 150, Organ	4	4	Organ 9
M. 183; 280, 281, 282 or 283	2	3	Conducting; Survey courses
M. 252	3	-	Form
M. 253, 254	2	2	Counterpoint
M. 218, 219	1	1	Methods and pedagogy
M. 102 or M. 105	1	1	Univ. Chorus; Univ. Choir
Elective	2	2	Music
Art 30; Academic Elective	3	3	Art apprec.;[2] Elective
	Women 34 hr.		
	Men 34 hr.		
Senior Year			
M. 150, Organ	4	4	Organ 10
M. 102 or M. 105	1	1	Univ. Chorus; Univ. Choir
M. 220, 221	1	1	Repertoire
M. 299	-	2	Recital
Elective	4	4	Music
Soc. Sci.	4	4	Intro. gen. course[3]
	Women 30 hr.		
	Men 30 hr.		

Total 138 hr. (Women)

144 hr. (Men)

[1]Or Core Group C elective.
[2]Or Core Group A elective.
[3]Or Core Group B elective.

APPLIED CURRICULUM

Flute, Oboe, Clarinet, Saxophone, Bassoon, Horn, Trumpet, Trombone, Euphonium, Tuba, Percussion, Violin, Viola, 'Cello, and Double Bass

Freshman Year	*First Sem.*	*Second Sem.*	*Course Description*
M. 150, Applied Music	4	4	Instrument 7
M. 1, 2	4	4	First-year theory
M. 150, Piano	2	2	Piano 2
M. 100 or M. 103	1	1	Band, Orchestra
English 1, 2	3	3	Composition and rhetoric
Biol. or Phys. Sci. 1, 2	4	4	Gen. biol.; Intro. gen. course[1]
Phys. Ed.	1	1	
Mil. or Air Sci. 1, 2 (M)	2	2	
	Women 38 hr.		
	Men 42 hr.		
Sophomore Year			
M. 150, Applied Music	4	4	Instrument 8
M. 150, Piano	2	2	Piano 3
M. 3, 4	4	4	Second-year theory
M. 140, 141	3	3	History of music
M. 100 or M. 103	1	1	Band, Orchestra
Elective	3	3	
Phys. Ed. (W)	1	1	
Mil. or Air Sci. 3, 4 (M)	2	2	
	Women 36 hr.		
	Men 38 hr.		
Junior Year			
M. 150, Applied Music	4	4	Instrument 9
M. 117, 118	2	2	Instn.; Orch. & Band Arr.
M. 218, 219	1	1	Methods and pedagogy
M. 155	1	1	Chamber music
M. 100 or M. 103	1	1	Band, Orchestra
M. 253, 254	2	2	Counterpoint
M. 252	3	-	Form
Art 30; Academic Elective	3	3	Art apprec.;[2] Elective
	Women 31 hr.		
	Men 31 hr.		
Senior Year			
M. 150, Applied Music	4	4	Instrument 10
M. 280, 281, 282, 283; 299	3	2	Survey courses; Recital
M. 155	1	1	Chamber music
M. 100 or M. 103	1	1	Band, Orchestra
Elective	2	2	Music
Soc. Sci.	4	4	Intro. gen. course[3]
	Women 29 hr.		
	Men 29 hr.		

Total 134 hr. (Women)

140 hr. (Men)

[1]Or Core Group C elective.
[2]Or Core Group A elective.
[3]Or Core Group B elective.

APPLIED CURRICULUM—VOICE

Freshman Year	*First Sem.*	*Second Sem.*	*Course Description*
M. 150, Voice	4	4	Voice 7
M. 150, Piano	2	2	Piano 2
M. 1, 2	4	4	First-year theory
M. 102 or M. 105	1	1	Choral Union, Univ. Choir
English 1, 2	3	3	Composition and rhetoric
Foreign Lang.	3	3	Italian, French, German[1]
Phys. Ed.	1	1	
Mil. or Air Sci. 1, 2 (M)	2	2	
	Women 36 hr.		
	Men 40 hr.		
Sophomore Year			
M. 150, Voice	4	4	Voice 8
M. 150, Piano	2	2	Piano 3
M. 3, 4	4	4	Second-year theory
M. 140, 141	3	3	History of music
M. 102 or M. 105	1	1	Choral Union or Univ. Choir
Foreign Lang.	3	3	Italian, French, German
Phys. Ed. (W)	1	1	
Mil. or Air Sci. 3, 4 (M)	2	2	
	Women 36 hr.		
	Men 38 hr.		
Junior Year			
M. 150, Voice	4	4	Voice 9
M. 20	2	2	Intro. opera theatre
M. 253, 254	2	2	Counterpoint
M. 102 or M. 105	1	1	Choral Union or Univ. Choir
M. 252	3	-	Form
Foreign Lang.	3	3	Italian, French, German
Core Group B, C[2]	3	3	
	Women 33 hr.		
	Men 33 hr.		
Senior Year			
M. 150, Voice	4	4	Voice 10
M. 210	2	2	Opera theatre
M. 218, 219	1	1	Methods and pedagogy
M. 299	-	2	Recital
M. 280, 281, 282, or 283	3	-	Survey courses
Core Group A[3]	-	3	
M. 102 or M. 105	1	1	Choral Union or Univ. Choir
M. 220, 221	1	1	Repertoire
Elective	2	2	Music
	Women 30 hr.		
	Men 30 hr.		

Total 135 hr. (Women)

141 hr. (Men)

[1]One year each of Italian, French, German.
[2]One Core course from Group B and one Core course from Group C required.
[3]One Core course from Group A.

THEORY AND COMPOSITION CURRICULUM[1]

Freshman Year	*First Sem.*	*Second Sem.*	*Course Description*
M. 150, Applied	4	4	Applied music[2]
M. 1, 2	4	4	First-year theory
M. 100, 102, 103, 105, or 155	1	1	Musical organization[3]
English 1, 2	3	3	Composition and rhetoric
Core Group C	4	4	
Phys. Ed.	1	1	
Mil. or Air Sci. 1, 2 (M)	2	2	
	Women 34 hr.		
	Men 38 hr.		
Sophomore Year			
M. 150, Applied	4	4	Applied music
M. 3, 4	4	4	Second-year theory
M. 114	2	2	Composition
M. 140, 141	3	3	History of music
M. 100, 102, 103, 105, or 155	1	1	Musical organization
French, German, Italian 1, 2	3	3	First-year foreign language
Phys. Ed. (W)	1	1	
Mil. or Air Sci. 3, 4 (M)	2	2	
	Women 36 hr.		
	Men 38 hr.		
Junior Year			
M. 150, Applied	4	4	Applied Music
M. 252	3	-	Form
M. 253, 254	2	2	Counterpoint
M. 114	2	2	Composition
M. 117, 118	2	2	Instn.; Orchn. & Band Arr.
M. 100, 102, 103, 105, or 155	1	1	Musical organization
French, German, Italian 3, 4	3	3	Second-year foreign language
	Women 31 hr.		
	Men 31 hr.		
Senior Year			
M. 150, Applied	4	4	Applied music
M. 183, 184	2	2	Conducting
M. 114; M. 255	2	2	Composition; Project[4]
M. 280, 281, 282, or 283	3	3	Survey courses
M. 120	2	-	Choral arranging
M. 100, 102, 103, 105, or 155	1	1	Musical organization
Core Group B	4	4	
	Women 34 hr.		
	Men 34 hr.		

Total 135 hr. (Women)

141 hr. (Men)

[1]A student working toward the degree of Bachelor of Music in Theory and Composition must have at least an average of "B" in the required freshman and sophomore Theory courses.

[2]Candidates for this degree must complete grade level 7 on their major instrument and grade level 4 in piano. At least 10 hours of Applied Music credit must be in an area other than the major.

[3]At least 4 credit hours must be in a major performing group.

[4]Major project in Theory or Composition.

MUSIC EDUCATION CURRICULUM—VOCAL EMPHASIS

Freshman Year	*First Sem.*	*Second Sem.*	*Course Description*
M. 150, Applied Major	2	2	Voice or Keyboard 4
M. 150, Applied Minor	1	1	Voice 1 or Piano 2A, 2B[1]
M. 84, 85, Applied Class	1	1	String class
M. 1, 2	4	4	First-year theory
M. 102 or M. 105	1	1	Choral Union, Univ. Choir
English 1, 2	3	3	Composition and rhetoric
Biol. or Phys. Sci. 1, 2	4	4	Gen. biol.; intro. gen. course
Phys. Ed.	1	1	
Mil. or Air Sci. 1, 2 (M)	2	2	
	Women 34 hr.		
	Men 38 hr.		
Sophomore Year			
M. 150, Applied Music	2	2	Voice or Keyboard 5
M. 150, Applied Minor	2	2	Voice 2 or Piano 3
M. 3, 4	4	4	Second-year theory
M. 140, 141	3	3	History of music
M. 183, 184	2	2	Conducting
M. 102 or M. 105	1	1	Choral Union, Univ. Choir
Hist. 1, 2	3	3	World civilization
Phys. Ed. (W)	1	1	
Mil. or Air Sci. 3, 4 (M)	2	2	
	Women 36 hr.		
	Men 38 hr.		
Junior Year			
M. 150, Applied Major	2	2	Voice or Keyboard 6
M. 80, 81 or 82, 83, Applied Class	1	1	Woodwind or brass class
M. 181, 182	3	3	Music Ed.—elem.; Mus. Ed.—sec.
M. 120	-	2	Choral arranging
M. 102 or M. 105	1	1	Choral Union, Univ. Choir
Educ. 105, 106	3	3	Human growth & development
Educ. 100	1	-	Orientation and selection
Soc. Sci. 1, 2	4	4	Intro. gen. course
Art 30	3	-	Apprec. of fine arts
	Women 33 hr.		
	Men 34 hr.		
Senior Year			
M. 150, Applied Major	2	2	Voice or Keyboard 7
M. 86, Applied Class	1	-	Percussion class
M. 102 or M. 105	1	1	Choral Union, Univ. Choir
English 18; 3, 4, 5, or 6	6	-	Adv. written and spoken; Lit.
Educ. 115	3	-	Student teaching—elementary
Educ. 130	2	-	Materials and Methods—elem.
Educ. 125	-	4	Student teching—secondary
Educ. 120	-	4	Principles of teaching
Educ. 169	-	2	Materials and methods—sec.
Health Ed. 102	-	2	School health program
	Women 30 hr.		
	Men 30 hr.		

Total 134 hr. (Women)

140 hr. (Men)

[1]Students must demonstrate piano level 4 to use organ as an applied minor.

MUSIC EDUCATION CURRICULUM
INSTRUMENTAL EMPHASIS[1]

Freshman Year	*First Sem.*	*Second Sem.*	*Course Description*
M. 150, Applied Major	2	2	Major instrument 4
M. 150, Applied Piano or Instr.	1	1	Piano 1A, 1B or Instr. 3
M. 84, 85, Applied Class	1	1	String class
M. 1, 2	4	4	First-year theory
M. 100 or 103	1	1	Band, Orchestra
English 1, 2	3	3	Composition and rhetoric
Biol. or Phys. Sci. 1, 2	4	4	Gen. biol.; Intro. gen. course
Phys. Ed.	1	1	
Mil. or Air Sci. 1, 2 (M)	2	2	
	Women 34 hr.		
	Men 38 hr.		
Sophomore Year			
M. 150, Applied Major	2	2	Major instrument 5
M. 150, Applied Piano or Instr.	1	1	Piano 2A, 2B or Instr. 4
M. 82, 83, Applied Class	1	1	Brass class
M. 3, 4	4	4	Second-year theory
M. 140, 141	3	3	History of music
M. 183, 184	2	2	Conducting
M. 100, 102, 103	1	1	Band, Orchestra; (Chorus)[2]
Hist. 1, 2	3	3	World civilization
Phys. Ed. (W)	1	1	
Mil. or Air Sci. 3, 4 (M)	2	2	
	Women 36 hr.		
	Men 38 hr.		
Junior Year			
M. 150, Applied Major	2	2	Major instrument 6
M. 150, Applied Voice	1	1	Voice 1
M. 80, 81, Applied Class	1	1	Woodwind class
M. 117, 118	2	2	Instn.; Orchn. & Band Arr.
M. 181, 182	3	3	Mus. Ed.—elem.; Mus. Ed.—sec.
M. 100, 102, 103	1	1	Band, Orchestra; (Chorus)[2]
Educ. 105, 106	3	3	Human growth & development
Educ. 100	1	-	Orientation and Selection
Soc. Sci. 1, 2	4	4	Intro. gen. course
Art 30	-	3	Apprec. of fine arts
	Women 38 hr.		
	Men 38 hr.		
Senior Year			
M. 150, Applied Major	2	2	Major instrument 7
M. 86, Applied Class	1	-	Percussion class
M. 100, 102, 103	2	2	Band, Orchestra; (Chorus)[2]
English 18; 3, 4, 5, 6	6	-	Adv. written and spoken; Lit.
Educ. 115	3	-	Student teaching—elementary
Educ. 130	2	-	Materials and methods—elem.
Educ. 125	-	4	Student teaching—secondary
Educ. 120	-	4	Principles of teaching
Educ. 169	-	2	Materials and methods—sec.
Health Ed. 102	-	2	School health program
	Women 32 hr.		
	Men 32 hr.		

Total 140 hr. (Women)

146 hr. (Men)

[1]Piano majors in Instrumental will complete level 4 on one other instrument.
[2]Music Education majors in Instrumental are required to be in a major choral group for at least one year.

ACCELERATED MUSIC EDUCATION CURRICULUM

Students wishing to complete the Music Education curriculum in less than four years may, with the approval of the adviser and the Chairman of Music Education, accelerate their program by attending summer sessions. All requirements of the four-year curriculum must be satisfied.

COMBINED APPLIED–MUSIC EDUCATION CURRICULUM

An optional five-year program can be arranged for students who desire to meet the requirements of majors in both Applied Music and Music Education. Admission to this program is by written consent of the Chairman of Applied Music and the Chairman of Music Education after the student has completed two semesters. This curriculum satisfies the requirements of the Professional Certificate, Grades 1-12.

The numerous possible combinations of Applied Music with Music Education cannot be listed separately in this bulletin. When the student becomes a candidate for this degree, his adviser designates the specific courses which must be taken to satisfy the requirements for both Applied Music and Music Education. By attending summer sessions, it may be possible to complete the combined curriculum in four years.

TEACHER CERTIFICATION

Students successfully completing the Music Education curriculum will qualify for the Professional Certificate, Grades 1-12. This certificate qualifies one to teach music on both elementary and secondary levels.

Music majors wishing to qualify for a second teaching field other than music at secondary levels will satisfy the requirements for the Professional Certificate, Grades 7-12, by completing the requirements of the second teaching field and the following courses in Education: 100, 105, 106, 120, 124, 169, and an approved 2-hour elective in Secondary Education. (See College of Education section for requirements in teaching fields.)

Students who choose Music as the first teaching field, whether enrolled in the Division of Music or in the College of Education, must complete level 7 in the applied major. Students who are enrolled in the College of Education who choose Music as the second teaching field must complete level 5 in the applied major. (See College of Education section.)

COURSES OF INSTRUCTION IN MUSIC

1. Theory. I. 4 hr. Thorough training in the melodic, harmonic and rhythmic elements of music. Triads, intervals, keys, scales, cadences, notation, rhythmic reading, sight singing, melodic and harmonic dictation, keyboard harmony.

2. Theory. II. 4 hr. PR: Music 1. Continuation of the melodic and harmonic dictation. Seventh chords, modal scales, key relationships, modulation, transposition, and the study of four-part writing, keyboard harmony.

3. Theory. I. 4 hr. PR: Music 2. Study of the harmonic technique of the 18th and 19th centuries. Introduction to formal analysis, counterpoint, and 20th century techniques. Melodic and harmonic dictation, four-part writing, modulation, altered chords, chorale harmonization, keyboard harmony.

4. Theory. II. 4 hr. PR: Music 3. Continuation of Music 3.

10. Appreciation of Music. I, II. 3 hr. An introductory course designed to develop an appreciation and understanding of the significance of music as a fine art, and to help the student to develop intelligent listening habits. Musical terminology and historical data are presented as needed but central to the course is the listening experience.

11. Music as an Art and Science. I, II. 2 hr. PR: Music 10 or its equiv. Music in the elementary school curriculum. Music methods and materials for teachers in the first three grades. Two recitation periods and one laboratory period per week. Not open to music majors.

12. Music Materials and Procedures. I, II. 2 hr. PR: Music 11 or its equiv. Continuation of Music 11. Methods and materials for teachers in upper grades. Criteria for utilization of notational elements. Two recitation periods and one laboratory period per week. Not open to music majors.

20. Introduction to Opera Theatre. I, II. 0-2 hr. Max. credit 8 hr. PR: Consent. Practical work in all aspects of lyric theatre production. Development of lyric theatre stage technique through movement studies, performance in minor roles, and operatic scenes.

77. Enjoyment of Music. I. 1 hr. A non-technical course dealing with the elements of music—rhythm, timbre, form, harmony, melody. Not open to music majors.

78. Enjoyment of Music. II. 1 hr. Continuation of Music 77. Not open to music majors.

80. Woodwind Class. I, II. 1 hr. Beginning instruction on flute and clarinet.

81. Woodwind Class. I, II. 1 hr. Beginning instruction on oboe and bassoon.

82. Brass Class. I, II. 1 hr. Beginning instruction on trumpet and trombone.

83. Brass Class. I, II. 1 hr. Beginning instruction on baritone and tuba.

84. String Class. I, II. 1 hr. Beginning instruction on violin and viola.

85. String Class. I, II. 1 hr. Beginning instruction on cello and string bass.

86. Percussion Class. I, II. 1 hr. Beginning instruction on percussion.

100. Band. I, II. 0 to 1 hr.

102. University Choral Union. I, II. 0 or 1 hr.

103. University-Community Symphony Orchestra. I, II. 0 or 1 hr.

105. University Choir. I, II. 0 to 1 hr.

114. Composition. I, II. 2 hr. PR: Music 4 or consent. Creative writing. Course may be repeated for credit.

117. Instrumentation. I. 2 hr. PR: Music 2. Study of the characteristics of band and orchestral instruments and their use in scoring.

118. Orchestration and Band Arranging. II. 2 hr. PR: Music 117. Problems in scoring for orchestral ensembles and band.

120. Choral Arranging. II. 2 hr. PR: Music 2. A study of the characteristics and problems in scoring for choral combinations.

140. History of Music. I. 3 hr. Survey of music history from the pre-Christian era to the baroque.

141. History of Music. II. 3 hr. Survey of music history from the baroque to the contemporary period.

150. Applied Music. I, II. 1-4 hr. Open to qualified students in any field in Applied Music. Course number may be repeated as many times as necessary or desirable. Credit given at the following rates:

1. For music majors, two hours for each 30-minute weekly lesson.
2. For other students, a maximum of one 30-minute lesson per week for one hour of credit.
3. Students in lower grade levels of Applied Music may be grouped in small classes for initial instruction. 1-2 hr. credit.

155. Chamber Music. I, II. 0 to 1 hr. This course provides the opportunity to perform in small ensembles. Course may be repeated.

181. Music Education. I. 3 hr. Essentials of music education in the elementary grades.

182. Music Education. II. 3 hr. Essentials of music education in junior and senior high school.

183. Conducting. I. 2 hr. A basic course in conducting techniques, both choral and instrumental.

184. Conducting. II. 2 hr. PR: Music 183. Continuation of Music 183, including more advanced score reading and conducting techniques, both choral and instrumental.

198. Major Project in Composition or Theory. 2 hr. PR: Music 4.

200. Band, Orchestra, Choral, Opera Theatre, and Music Education Clinics. 2 hr. Special problems of organization and development of the various performing organizations. Lecture, laboratory and discussion groups.

201. Music in the Elementary School. I, II. 2 hr. PR: Music 10, 11, 12, or consent. Development of skills, procedures, techniques, and materials used by the general classroom teacher of music in grades 1-8. Not open to music majors.

210. Opera Theatre. I, II. 0-2 hr. Max. credit 8 hr. PR: Music 20 or consent. Continuation of Music 20. Performance of major roles and advanced production techniques. Qualified students will undertake production-direction projects under supervision.

218. Methods and Pedagogy in Major Applied Fields. I. 1 hr. PR: Music 150.

219. Methods and Pedagogy in Major Applied Fields. II. 1 hr. PR: Music 218.

220. Repertoire. I. 1 hr.

221. Repertoire. II. 1 hr.

246. Music in the Junior High School. I. 2 hr. PR: Music 181-182 or equiv. A consideration of the potentialities and special needs of the junior high school in music education; programs, procedures, and materials.

252. Analysis of Musical Form. I. 3 hr. PR: Music 4. A detailed study of the structure of music.

253. Counterpoint. I. 2 hr. PR: Music 4 or consent. Sixteenth century counterpoint.

254. Counterpoint. II. 2 hr. PR: Music 4 or consent. Eighteenth century counterpoint.

280. Survey of Operatic Music. II. 3 hr. PR: Music 141.

281. Survey of Symphonic Music. I. 3 hr. PR: Music 141.

282. Studies in Contemporary Music. I. 3 hr. PR: Music 141.

283. Survey of Chamber Music. II. 3 hr. PR: Music 141.

299. Recital. I, II. 0 to 2 hr. Not available for graduate credit. To be used to fulfill applied major graduation requirement only when the student has achieved grade level 9. Students who have reached grade level 6 may receive 1 hour credit, which may not be used to fulfill graduation recital requirement.

BEGINNING APPLIED CLASSES

Class instruction at the beginning levels is provided for 1 hour credit on the following instruments and in voice:

Woodwind—Music 80 and 81; Brass—Music 82 and 83; String—Music 84 and 85; Percussion—Music 86; Piano—Music 150, Sections 24 and 25; Voice—Music 150, Sections 26 and 27.

ORGANIZATIONS

Music organizations available to all University students with or without 1 hour credit are: Band—Music 100; University Choral Union—Music 102; University-Community Symphony Orchestra—Music 103; University Choir—Music 105; Chamber Music—Music 155; Opera Theatre—Music 20 and 210.

GRADUATE STUDY

The Division of Music offers programs of study leading to the Master of Music degree (with major areas in Music Education, Theory, Applied Music, Composition, Church Music, and History of Music), the Doctor of Philosophy degree (with fields of specialization in Theory, Music Education, Musicology, or Composition), the Doctor of Musical Arts degree in Piano or Voice, and, jointly in cooperation with the College of Education, the Doctor of Education degree in Music Education. Refer to the 1965-66 Graduate School *Announcements* for further details regarding admission, requirements, curricula, and graduate courses.

GRADUATE ASSISTANTSHIPS

The Division of Music has available each year a number of graduate assistantships carrying stipends from $1,500 to $2,000 for the nine-month school-year plus the remission of all tuition fees for a twelve-month period beginning in September. Recipients are expected to work 12 hours per week in the Division of Music; the areas in which assistantships are awarded vary from year to year but embody classroom teaching in Theory and Music Education and practical assistance in Band, Opera, and Piano Accompanying. Preference is usually given those applicants who appear in person for an audition and interview. For further information and application, write to the Chairman, Department of Graduate Studies, Division of Music.

EXTENSION DIVISION

288. Music Education. I. 3 hr. PR: Consent. A study of the fundamentals of music, and the procedures and materials used in teaching music in the elementaly classroom. Credit for this course will satisfy only First Class Certificate renewal or an elective on a degree which permits open electives. Cannot be used to renew an emergency certificate of any type. Offered only in the University Extension Division. Not open to music majors.

289. Music Education. II. 3 hr. PR: Music 288. Continuation of Music 288. Credit restrictions for this class are the same as for Music 288. Offered only in the University Extension Division. Not open to music majors.

290. Choral Conducting and Procedures. I. 3 hr. PR: Consent. The organization and development of school and community choral groups with particular emphasis on conducting techniques, choral music materials, and choral teaching procedures. Offered in the University Extension Division only. For non-music majors only.

291. Choral Conducting and Procedures. II. 3 hr. PR: Music 290 or consent. Continuation of Music 290. Offered in the University Extension Division only. For non-music majors only.

292. History and Appreciation of Music. I. 3 hr. PR: Consent. The history and appreciation of music from the Christian era through the baroque period. Offered in the University Extension Division only. For non-music majors only.

293. History and Appreciation of Music. II. 3 hr. PR: Music 292 or consent. Continuation of Music 292 including the classic, romantic and modern periods. Offered in the University Extension Division only. For non-music majors only.

294. Class Piano. I. 2 hr. PR: Consent. Offered in the University Extension Division only. For non-music majors only.

295. Class Piano. II. 2 hr. PR: Music 294 or consent. Offered in the University Extension Division only. For non-music majors only.

APPLIED MUSIC REQUIREMENTS

Undergraduate Applied Music Requirements*

Applied grade levels for entering students are listed in the outlines of the various curricula. These grade levels are based upon normal progress expected of students to enable them to fulfill necessary grade level requirements for graduation. Students who do not meet indicated grade levels must make up their deficiencies as soon as possible, and are subject to probation.

When the faculty feels the deficiencies are so great and the student's musical talent so minimal that the possibility of fulfilling graduation requirements is impossible, the student will be notified that his enrollment in the School of Music will be terminated.

Applied Music Majors

All undergraduates in Applied Music must complete at least grade level 3 in piano to be eligible for graduation.

All undergraduates majoring in Applied Music must complete grade level 10 on their major instrument to be eligible for graduation.

Music Education and Theory and Composition Major

All undergraduates in Music Education and Theory and Composition must complete grade level 7 on their major instrument to be eligible for graduation.

Undergraduates in Music Education-Choral must complete at least grade level 3 in piano to be eligible for graduation; undergraduates in Theory and Composition at least grade level 4 in piano to be eligible for graduation. Music Education—Instrumental majors must complete piano level 2B.

COURSES IN APPLIED MUSIC**

Class Piano — Music 150 Section 24 and 25

1A

Oxford Piano Course for Adult Beginner. Ada Richter; *Piano Course for the Older Beginner or Basic Piano,* Cheyette and Shake. Harmonization, transposition, and sight reading of simple melodies. Scales and arpeggios.

1B

Continuation of 1A.

2A

Second Solo Book, Diller-Quaile; *Young Pianists Library,* Denes Agay; *Library for Piano Students,* Frances Clark. Continuation of harmonization, transposition, and sight reading. Scales and arpeggios.

*No credit will be given transfer students for Applied Music except by examination.

**The material outlined in the various grade levels is to be used as a guide and will vary with individual students. Student's grade levels are based primarily on their technical and musical achievements.

2B

Third Solo Book. Diller-Quaile; *Bach for Beginners*. Scales, all major and harmonic minors, hands together, 2 octaves, arpeggios. Sight reading four-part harmony, chord progressions. Ability to play familiar tunes with accompaniments.

Piano — Music 150 Section 09

Primary Piano A and B

A choice from the following material: Thompson, *Teaching Little Fingers to Play;* Fletcher, *Music Lessons Have Begun;* Frances Clark Library, *Tune Time*, Books A & B, and *Technic Time*, Books A & B; Diller-Quaile, *First Solo Book*.

Technic—Major scales, to be played hands separately in quarter notes, one and two octaves, 4/4 time M.M. quarter note = 88.

Piano 1

Thompson, *First Grade Etudes;* Bentley, *Four and Twenty Melodies;* Frances Clark Library, *Piano Literature*, Book 1, and *Contemporary Literature*, Book 1; *Royal Conservatory of Toronto Method*, Grade 1; Frost, *The Adult at the Piano*, Books I and II.

Technic—All major scales, to be played hands separately in quarter and eighth notes, two octaves, 4/4 time, M.M. quarter note = 92.

Piano 2

Hirschberg, *Technic is Fun;* Czerny-Germer, *Studies*, Vol. 1, Part 1; Streabog, *Twelve Easy and Melodious Studies;* Terry, *Sunny Corner;* Bach-Carroll, *First Lessons in Bach*, Book 1; Frances Clark Library, *Piano Literature of 17th, 18th and 19th Centuries*, Book 2 and *Contemporary Literature*, Book 2; Bentley, *Summertime Sketches;* Gretchaninoff, *Children's Book*, Opus 98; Kabalevsky, *Twenty-four Pieces for Children*, Opus 39; Tansman, *Pour les Enfants*, Set 1.

Technic—All major and harmonic minor scales, to be played hands separately M.M. quarter note = 96, as follows: One octave in quarter notes. Two octaves in eighth notes.

Arpeggios—Diminished sevenths, to be played hands separately, M.M. quarter note = 88.

Piano 3

Burgmuller, *Studies*, Opus 100; Bertini, *Studies*, Opus 100; Bach-Carrol, *First Lessons in Bach*, Book 1; *Easy Sonatinas* by composers such as Clementi, Kuhlau, Mozart, etc; Suggested supplementary material; Bartok, *For Children*, Vols. I and II, Bloch, *Enfantines;* Prokofieff, *Music for Children*, Opus 65; *Meet Modern Music*, Parts 1 and 2; Schumann, *Album for the Young*.

Technic—All major, harmonic minor scales, to be played hands together, one octave apart, M.M. quarter note = 72, in the following forms: One octave in quarter notes. Two octaves in eighth notes. Four octaves in sixteenth notes.

Arpeggios—All diminshed sevenths, and major and minor white key triad arpeggios, hands together to be played in similar patterns as scales, M.M. quarter note = 66.

Piano 4

Bertini, *Studies*, Opus 29; Loeschhorn, *Studies*, Opus 66, 169, 170; Bach-Carroll, *First Lessons in Bach*, Book 2; Sonatinas by composers such as Beethoven, Clementi, Haydn, Kuhlau, Mozart, etc.; Grieg, *Lyrical Pieces*, Opus 12; Tansman, *Ten Diversions for the Young Pianist*.

Technic—All major and minor scales (harmonic and melodic) to be played hands together, M.M. quarter note = 80 in the following forms: One octave in quarter notes. Two octaves in eighth notes. Three octaves in eighth notes (triplets). Four octaves in sixteenth notes.

Arpeggios—All diminshed sevenths, major and minor triads in inversions to be played in similar patterns as scales, M.M. quarter note = 72.

PIANO 5

Czerny, *School of Velocity,* Opus 299; Bach, *Two-Part Inventions; Easier Sonatas* by Beethoven, Mozart, and Haydn; Mendelssohn, *Songs Without Words;* Beethoven, Six Variations on *"Nel cor piu non mi sento"*; Debussy, *Girl with the Flaxen Hair.*

Technic—All major and minor scales (harmonic and melodic) to be played in parallel motion, M.M. quarter note = 84. Major scales to be played in contrary motion, M.M. quarter note = 84.

Arpeggios—All diminshed sevenths, major and minor triads to be played in inversions, M.M. quarter note = 76.

PIANO 6

Czerny, *School of Velocity,* Opus 299; Cramer, *Studies;* Bach, *Eighteen Little Preludes and Fugues, Two and Three Part Inventions;* Sonatas of appropriate difficulty by Beethoven, Haydn, and Mozart, such as *Beethoven* Opus 49; Haydn, *Sonata in E minor;* Mozart, *Sonata in G major,* K. 283; Chopin, *Selected Preludes and Mazurkas;* Schumann, *Forest Scenes;* Debussy, selected *Preludes* or material of similar difficulty.

Technic—All major scales to be played in parallel and contrary motion and in thirds and tenths, M.M. quarter note = 92. All minor scales to be played in parallel and contrary motion, M.M. quarter note = 92.

Arpeggios—All diminished sevenths, major and minor triads, and dominant sevenths to be played in inversions, M.M. quarter note = 84.

PIANO 7

Czerny, *Studies,* Opus 740; Clementi, *Gradus ad Parnassum;* Bach, *Three Part Inventions, Easier Movements from Suites, Preludes and Fugues from the Well-Tempered Clavier; Sonatas* by Haydn, Mozart, and Beethoven equivalent in difficulty to Opus 14, No. 1 and Opus 10, No. 1 *Romantic and Modern Compositions.*

Technic—All major and minor scales in thirds, sixths, and tenths, and in parallel and contrary motion, M.M. quarter note = 100.

Arpeggios—All major and minor triads, diminished and dominant sevenths in inversions, M.M. quarter note = 92.

PIANO 8

Clementi, *Gradus ad Parnassum;* Moszkowski, *Etudes;* Cramer, *Studies;* Bach, *Well-Tempered Clavier and Suites;* Beethoven, *Sonatas,* equivalent in difficulty to Opus 2, No. 3; Concertos by Mozart or Mendelssohn; Romantic and modern compositions by Chopin, Schumann, Schubert, Debussy, Kabalevsky, etc.

Technic—All scales and arpeggios as in Piano 7 with increased M.M. speeds.

PIANO 9

Bach, *Well-Tempered Clavier, Toccatas, Partitas;* Beethoven, *Sonatas,* Opus 10, 22, 31; Chopin *Etudes, Scherzi, Polonaises;* Schumann, *Papillons;* Easier works of Brahms, Liszt; Ravel, *Sonatine;* contemporary works by American composers.

Technic—Same as in piano 8 with increased speeds.

PIANO 10

Chopin, *Etudes;* Bach, *Italian Concerto, Well-Tempered Clavier;* Beethoven, *Sonatas, Piano Concertos;* Brahms, *Rhapsodies* in g and b minor, pieces from Opus 76, 78, 116, 119; Chopin, *Ballades;* Debussy, *Preludes, Pour le Piano;* Bartok, *Suite* Opus 14; Hindemith, *Sonata No.* 3; Contemporary works by American composers.

Technic—Same as in piano 9.

GRADUATE

Chopin, Liszt, *Etudes;* Bach, *Chromatic Fantasy and Fugue;* Beethoven, Late Sonatas and Opus 53, 57, *Emperor Concerto;* Chopin, *Sonatas;* Brahms, pieces from Opus 116, 117, 118, 119, *Variations on a theme by Handel, Variations on a Theme by Paganini,* Concertos in B flat major and d minor; Schumann, *Carnaval, Symphonic Etudes;* Ravel, *Toccata;* Prokofieff, *Sonata No.* 7; Barber, *Sonata,* Opus 26.

Technic—Same as in piano 10.

Pipe Organ — Music 150 Section 10

To be accepted as an undergraduate Applied Music Major in Organ a student must demonstrate grade-level 5 in piano.

Students other than applied organ majors must demonstrate grade-level 4 in piano to be allowed to study organ.

Organ 1-2-3

First Elements of Organ Technique, Jennings; *Eight Little Preludes and Fugues*, Bach; 79 *Chorale Preludes*, Dupre.

Technic—Manual and Pedal Scales.

Organ 4-5-6

Selected *Preludes and Fugues*, Bach; Selections from the Liturgical Year; *Sonatas* 2, 4, 5, Mendelssohn; Compositions by Franck, Karg-Elert, Reger, Sowerby, and Mulet.

Technic—Manual and Pedal Scales.

Organ 7

Preludes and Fugues, Toccatas and Fugues, Trio Sonata 1, Bach; *Chorales*, Franck; *Sonata* 1, Mendelssohn; Compositions by contemporary composers. AGO examinations.

Organ 8

Selected *Preludes and Fugues, Toccatas and Fugues, Trio Sonata* 3, Bach; *Chorales*, Franck; *Sonata VI*, Mendelssohn; Selected movements from *Symphonies* of Widor and Vierne; Compositions by Reger, Sowerby, Dupre, Langlais. AGO examinations.

Organ 9

Selected major works, Bach; Movements from *Symphonies* of Widor and Vierne; Larger works by Sowerby, Willan, Dupre, Langlais, Messiaen. AGO examinations.

Organ 10

Selected major works, Bach; Selected works from Liszt, Reubke, Widor, Vierne, Dupre, Maleingreau, Roger-Ducasse, Simonds, and Hindemith. AGO examinations.

Violin — Music 150 Section 17

Violin 1

Studies: *Studies*, Laoureaux; *Foundation Studies*, Book I, Wohlfarht; Compositions: *Fifty Very Easy Pieces in the First Position*, Gruenberg; *Begin With Pieces*, Riegger; other compositions comparable to difficulty of studies.

Technic—Fundamentals, proper position of left and right hands in holding the violin and bow, elementary studies for left and right hands. Ability to place all fingers on each of the natural and altered tones within the compass of the first position. Tuning. Major scales and arpeggios in the first position. Use of various rhythms (eighth notes, sixteenth notes, triplets, dotted eighth to sixthteenth notes).

Violin 2

Studies: *Studies*, Book 2, Laoureaux; *Foundation Studies*, Book 2, Wohlfarht, Compositions: *Twelve Easy Pieces, Opus* 12, Pracht; *Donkey Doodle, Contra Dance, Peter Rabbit, Polka*, Kroll; other solos of comparable difficulty.

Technic—Major and minor scales and arpeggios in the first position. A broader use of bowing variations.

Violin 3

Studies: *School of Violin Technique, Opus* 1, *Book* 1, Sevcik; *Opus* 8, Sevcik; *Studies, Opus* 20, *Book* 1, Kayser; *Double Stop Studies*, Hoffman. Concertos: *Concertos No.* 2, *No.* 5 Seitz; other solos of comparable difficulty.

Technic—Two octave major and minor scales and arpeggios in the first three positions.

VIOLIN 4

Studies: *School of Violin Technics, Part* 1, Schradieck; *Opus* 38, Dont; *Opus* 1, *Book* 2, Sevcik; *Opus* 3, Sevcik. Concerto: *Concerto in A minor,* Vivaldi. Compositions: *Rondino in E-flat major,* Beethoven-Kreisler; other solos of comparable difficulty.

Technic—Two octave major and minor scales and arpeggios. Various bowings and rhythms. One octave scales in double stops.

VIOLIN 5

Studies: *Opus* 37, Dont; *Opus* 36, *No.* 1, Mazas; *Bowing Studies,* Casorti; *School of Violin Technics, Part* 1, Schradieck. Concertos: *Concerto in G minor,* Vivaldi; *Concerto in D major,* Seitz; others of comparable difficulty. Sonatas: *Sonata No.* 1 *in D major, Sonata No.* 3 *in C major,* Corelli.

Technic—Selected three octave major and minor scales and arpeggios. Scales in double stops.

VIOLIN 6

Studies: *Opus* 36, Mazas; selected studies, Kreutzer; *Scale Studies,* Flesch; *School of Violin Technics,* Part 2, Schradieck. Concertos: *No.* 2, *No.* 7, *No.* 9, De Beriot; *No.* 22, Viotti; *E minor,* Nardini; others of comparable difficulty. Sonatas: Handel; Tartini.

Technic—All major and minor scales in three octaves, three forms of minor and chromatic using different time values and various bowings (staccato, spiccato, martele, detache). A more advanced skill in double stops, bowing, combinations, octave passages, and other technical string devices.

VIOLIN 7

Studies: Kreutzer; Concertos: Kreutzer, Rode, Viotti, Nardini, other concertos of comparable difficulty. Sonatas: Handel, Veracini; Compositions: *Romances,* Beethoven; Kreisler; original compositions and arrangements; other compositions of comparable difficulty.

Technic—*Scale Studies,* Flesch; *School of Violin Technics,* Part 2, Part 3, Schradieck.

VIOLIN 8

Studies: *Etudes,* Fiorillo; selected etudes, Rode. Concertos: *Concerto in A minor,* Bach; *Concerto in A major,* Bach; *Concerto in G major,* Mozart; *Concerto in D major,* Mozart; other concertos of comparable difficulty. Sonatas: Veracini; Mozart; *Solo Sonatas and Partitas* (selected movements), Bach. Compositions: *Praeludium and Allegro,* Kreisler; *La Folia,* Corelli; *Chaconne,* Vitali; other compositions of comparable difficulty.

Technic—*Scale Studies,* Flesch; *Opus* 1, *Book* 3, Sevcik.

VIOLIN 9

Studies: *Etudes,* Rode; *Etudes, Opus* 19, Alard. Concertos: *Concerto in A major,* Mozart; *Concerto No.* 2, Spohr; other concertos of comparable difficulty. Sonatas: Beethoven; *Solo Sonatas and Partitas,* Bach. Compositions: Kreisler, *Sicilienne and Rigaudon; Romanza Andaluza,* Sarasate; other compositions of comparable difficulty.

Technic—*Scale Studies.* Flesch; *Opus* 1, *Book* 3 (continued), Sevcik.

VIOLIN 10

Studies: *Etudes,* Gavinies; *Opus* 35, Dont; *Etudes, Opus* 1, Schradieck. Concertos: *Concerto in G minor,* Bruch; *Concerto No.* 9, Spohr; *Concerto in E minor,* Mendelssohn; other concertos of comparable difficulty. Sonatas: Beethoven; *Sonata in A major,* Brahms; Piston; *Solo Sonatas and Partitas,* Bach. Compositions: Representative compositions of 19th and 20th century composers. Student should have an extensive knowledge of violin literature, including the works of Corelli, Tartini, Bach, Mozart, Beethoven, Wieniawski, Viotti, Rode, Kreutzer, Vieuxtemps, Saint-Saens, and representative works of 20th century composers.

Technic—*Scale Studies,* Flesch; *Opus* 1, *Book* 4, Sevcik.

Viola — Music 150 Section 16

Viola 1

Bow and Strings, Book 1, Herman; *First Studies, Opus* 86, Hofmann.

Technic—Fundamentals, proper position of left and right hands in holding the viola and bow, elementary studies for left and right hands. Ability to place all fingers on each of the natural tones within the compass of the first position. Tuning. Major scales and arpeggios in the first position. Use of various rhythms (eighth notes, sixteenth notes, dotted eighths to sixteenth notes).

Viola 2

A Tune a Day, Book 3, Herfurth; *Bow and Strings*, Book 3, Herman; *Introducing the Positions*, Whistler; *Foundation Studies*, Book 2, Wohlfarht; *Old Masters for Young Players*, edited by Palaschko, Moffat.

Technic—Major and minor scales and arpeggios in the first position. A broader use of bowing variations.

Viola 3

Studies: 20 *Progressive Exercises, Opus* 38, edited by Svecenski, Dont; *Viola Music for Concert and Church*, Boetje.

Technic—Two octave major and minor scales and arpeggios in the first three positions.

Viola 4

Studies: 40 *Studies*, Bruni; *Student Concerto No.* 3, Seitz; *Divertimento*, Haydn-Piatigorsky.

Viola 5

Studies: Opus 36, *Book* 1, Mazas; *Concerto in G minor*, Telemann; *Sonata in F Major*, Marcello.

Technic—Selected three octave scales, Major and minor, and arpeggios. Scales in double stops.

Viola 6

Studies: Opus 36, Mazas; *Selected Studies*, Kreutzer; *Concerto*, Hoffmeister; *Sonatas*, Corelli, Handel.

Technic—All major and minor scales in three octaves, three forms of minor and chromatic using different time values and various bowings (staccato, spiccato, martele, detache). A more advanced skill in double stops, bowing combinations, octave passages, and other technical string devices.

Viola 7

Studies: 42 *Studies*, Kreutzer; *Caprices*, Campagnoli. *Sonatas for Viola Da Gamba*, Bach; *Concerto in D Major, Opus* 1, Stamitz. Other solos of comparable difficulty.

Technic—Scale Studies, Flesch.

Viola 8

Studies: Fiorillo; *Selected Studies*, Rode; *Unaccompanied Cello Suites*, Bach; *Sonata in A Major, No.* 6, Boccherini; *LaFolia*, Corelli.

Technic—Scale studies, Flesch.

Viola 9

Studies: Etudes, Rode; *Twelve Caprices*, L. Fuchs; *Arpeggione Sonata*, Schubert; *Sonatas*, Brahms.

Viola 10

Studies: Etudes, Gravines; *Opus* 35, Dont; *Sonata, Opus* 11, *No.* 4, Hindemith; *Concerto*, Walton.

Technic—Scale studies, Flesch.

Violoncello — Music 150 Section 03

Violoncello 1

Position of 'cello. Holding of the bow with simple exercises on open strings to develop good basic sound production. Fundamental fingering positions of left hand. Tuning of instrument. Etudes: Work of the difficulty of Joseph Werner, *Practical Method of Violoncello,* Opus 12, Part 1; or *Violoncello Method,* Book 1, Dotzauer-Klingenberg. Elementary folk melodies and pieces in first position.

Technic—Scales in first position (no extensions).

Violoncello 2

Continuing work on production of good sound, correct position of both hands and instrument, and good intonation. Studies in use of extended position. Drill in interchangeable use of extended and regular positions, left hand. Etudes: Continuing use of above *Methods* with other exercises to develop dexterity in extended and regular positions.

Technic—Scales in first position using both extended and regular positions.

Violoncello 3

Continuing emphasis on good intonation at all times, as well as good position and improved sound. Introduction of 4th position, 3rd position, 2nd position, raised 1st position and half position. Exercises in each position, separately, as well as extensive drill in shifting from position to position and combining extensions and regular positions in scales as well as etudes and pieces. Etudes: Completion of above *Methods.* (Werner, Part 1 or Dotzauer-Klingenberg, Book II). Pieces in first four positions involving extended and regular positions, shifting, and emphasizing melodic playing.

Technic—Scales, both major and minor, the first four positions, emphasizing correct shifting.

Violincello 4

Continuing emphasis on good intonation, and improved sound production with addition of vibrato. Continued drill in first four positions, both extended and regular, and shifting. Introduction of 5th, 6th, and 7th positions. Etudes: Work of difficulty of Alwin Schroeder, 170 *Foundation Studies,* Vol. I; or 113 *Studies for Violoncello,* Vol. I, Dotzauer. Introduction of Sonatas (Handel, Marcello, Vivaldi) as well as continuing use of short pieces of more difficult nature.

Technic—Scales, major and minor, two octaves, all positions through 7th. Emphasis on shifting as well as improved sound production. Various bowings and rhythmic patterns.

Violoncello 5

Continuing work with vibrato, developing improved sound production. Development of musical expressiveness and awareness. Introduction of various bowings—bouncing bow, detache, stacatto, etc. Introduction of thumb position. Etudes: Continuing use of Schroeder and Dotzauer Studies. Sonatas by Vivaldi (E minor), Marcello (F major) or works of similar difficulty. Short works of comparable difficulty.

Technic—Scales and arpeggios, major and minor, three octaves.

Violoncello 6

Continuing development of good sound production along with development of dexterity of bow and left hand. Development of musical expressiveness and comprehension of differences in style through sonatas and pieces of virtuoso character. Thumb position continued. Etudes: Continued use of studies of comparable difficulty to *Studies* (*Book II*), Schroeder; or *Studies,* (*Book II*), Dotzauer. Short pieces of increasing difficulty. Sonatas by Vivaldi, Teleman, Marcello, Eccles (G minor). Concertos of difficulty of Goltermann *No.* 4 *in G.*

Technic—Scales and arpeggios in three octaves, various bowings and rhythmic patterns. Introduction of scales in thirds and octaves, involving thumb positions.

VIOLONCELLO 7

Development of technical security in all positions. Development of musical insight and conception of varying styles. Continuing development of sight-reading technique. Development of student's independence as far as working-out of new music is concerned. Etudes: Work of difficulty of *Studies*, Books II and III, Schroeder; and *Twenty-One Etudes*, Book I, Duport. *Sonatas* by Brahms (*E minor*), Vivaldi, unaccompanied suite by Bach (G major or D minor) or works of similar difficulty; *Symphonic Variations*, Boellmann; or work of similar difficulty.

Technic—Scales and arpeggios in three octaves. Various bowings and rhythmic patterns. Octaves and thirds in all positions.

VIOLONCELLO 8

Continued development of technical skill through major and minor scales (three and four octaves, various bowings and rhythmic patterns, thirds and octaves, thumb position), arpeggios, and etudes to be chosen from those of Schroeder, Duport, Such, Popper (*High School of Cello Playing, Opus* 73) to suit needs of individual student. *Sonatas* by Beethoven *Opus* 5, Brahms, Vivaldi, Boccherini or other works of comparable difficulty. Bach *Suites* (No. 2 or 3). Concerto or concert-piece by Goltermann, Klengel, d'Albert, Faure *Elegy* or works of similar difficulty.

VIOLONCELLO 9

Continuation of development of technical skill through scales and etudes outlined in Violoncello 8. *Sonatas* by Beethoven (No. 2 and 3). Bach, Boccherini; Solo *suites* (No. 4 or 5) Bach; *Variations*, Beethoven; or works of similar difficulty. *Concerto* by Lalo, Boccherini, concert-piece by Dohnanyi or works of similar difficulty.

VIOLONCELLO 10

All scales, major and minor, four octaves. Arpeggios, three octaves. Scales in thumb position. Scales and arpeggios in various bowing, rhythmic patterns and fingerings. Etudes by Popper, Dotzauer, Duport, Piatti, Franchomme at discretion of instructor. Graduation recital should include representative works from Classic, Romantic and/or Impressionistic, and Contemporary periods. Concerto to be played should be memorized and of the difficulty of Saint-Saens *Concerto in A Minor*. Sonata from Romantic Period of difficulty of *Sonata in F Major*, Brahms. Other works on program at discretion of instructor.

STRING BASS — MUSIC 150 SECTION 12

STRING BASS 1

Study material taken from methods and etudes such as *Progressive Method, Book* I, Butler; *Elementary Method*, Rubanc; *Modern Method for Double Bass*, N. Watson; *Method for Double Bass*, Zimmerman; *Practical Method for Double Bass*, Flockton. Simple folk tunes in half and first position.

Technic—Holding the instrument; holding the bow (French bow preferred); open string bowing exercises to develop correct position of right hand, fundamentals of tone production, and means of achieving various bowing effects—legato, staccato, spiccato; harmonic tuning; left hand positions; half and first position fingering; major scales and limited arpeggios in half and first positions; care of the bass; care of the bow.

STRING BASS 2

Technic—Continuation of elementary study material; correction of intonation faults; control of dynamics; simple repairs and adjustments most frequently needed; shifting to 2nd and 3rd positions; additional Major scales and introduction of minor scales and arpeggios within the fingering range; additional bowing effects such as louree, tremolo, etc. Easy tunes within limited range.

STRING BASS 3

Study material: Completion of elementary method (preparatory). Fairly simple tunes up to and including 4th position.

Technic—Continuation of basic technique development; emphasis on tone production and intonation; shifting between all positions up to and including 4th position; major and minor scales and arpeggios through 4th position with exercises in various types of bowing and rhythmic variety; pizzicato.

STRING BASS 4

Moderately easy solo material such as transcriptions of first position cello solos, Schlemueller, W. H. Squire, Popejoy, and others.

Technic—Major and minor scales and arpeggios with various bowing techniques up to and including 5th position; development of the full arm vibrato; further development of tone production, intonation, and shifting in the study of such materials as the *New Method for Double Bass,* Book 1, Simandl; *Tutor;* Langley; *Method for Bass,* Book 2, Butler.

STRING BASS 5

Study material from books and methods of the intermediate grade such as *Sixty Six Etudes,* Slama.

Medium easy solo literature such as *Intermezzo,* Vivaldi, and selected works from Zimmerman's transcriptions. Continuation in development of good sound, intonation, musicianship in the intermediate grades.

Technic—Major and minor scales and arpeggios with various bowings and rhythms up to and including 6th position with emphasis on proper use of left hand fingers in shifting between all positions in this range.

STRING BASS 6

Study material: *Method Book* 1, Simandl; *Double Bass Studies,* Madenski; 30 *Studies for Double Bass,* Moleaux.

Solo literature of medium difficulty such as found in the 34 *String Bass Solos* arranged by Lesinsky.

Technic—Continued drill in proper fingering and shifting between all positions up to and including 7th position; major and minor scales and arpeggios within that range using various bowing techniques with continued emphasis on good tone production, intonation, and an awareness of differences in musical styles.

STRING BASS 7

Study materials: *Etudes* by Simandl, Hrabe, Storch, and others as well as orchestral literature through such collections of excerpts as those by Reynolds and Strauss. *Bass Methods Book II-III.*

Medium difficult solo literature by Faure, Pergolese, Hindemith; sonata and concerto literature borrowed from easy cello sonatas and student concertos such as *C Major Sonata,* Breval; *Concerto Opus* 17, Grant.

Technic—Major and minor scales and arpeggios through two octaves; continued technique development as set forth in levels 4, 5, and 6 above.

STRING BASS 8

Study materials selected from intermediate through advanced grades to suite the needs of the individual student.

Solo material selected from available bass literature supplemented with sonata and concerto literature borrowed from moderately difficult to difficult cello works.

Technic—Introduction of thumb position; development of security and precision of fingering in all positions up to and including 7th position.

STRING BASS 9

Solo material to be selected from advanced works for bass and transcriptions from cello literature at discretion of instructor to lead student to a sensitive expressiveness and an understanding musicianship. Begin preparation of a recital.

Technic—Further drills and studies in thumb position; completion of major and minor scales and arpeggios in rhythmic and bowing patterns throughout range up to 12th position. Continuation of *Etude* studies and orchestral excerpts.

STRING BASS 10

Solo material to be selected from advanced to virtuoso levels or repertory available and suited to the needs of the student at the discretion of the instructor.

Technic—Completion of representative materials presented in standard Book II methods to bring student to his highest level of development in use of details of procedure which are essential to expertness of execution, in musicianship, and in performing artistically in his senior recital.

Flute — Music 150 Section 05

Flute 1

Fundamentals of tone production through the second octave; breath control. *Belwin Flute Method*, Vols. 1 and 2, Gekeler.

Technic—Major scales and arpeggios through 3 flats and 3 sharps—quarter notes.

Flute 2

Further refinement of tone production, breath control, embouchure flexibility; increased facility in the highest and lowest registers. *Belwin Flute Method*, Vols. 2 and 3, Gekeler; *Supplementary Studies*, Endresen.

Technic—Major and minor scales and arpeggios through 3 flats and 3 sharps—8th notes.

Flute 3

Increased fullness of tone, flexibility, articulation and execution. *Melodious and Progressive Studies*, Book I, ed. Cavally; Elementary solos, *Concert and Contest Collection*, ed. Voxman.

Technic—Major and harmonic minor scales, major and minor arpeggios—2 octaves; complete chromatic scale—8th notes.

Flute 4

Etudes: *Melodious and Progressive Studies*, Book 1, ed Cavally; 18 *Exercises*, Berbiguier. Literature: *Twenty-four Short Concert Pieces*, ed Cavally; *Concert and Contest Collection*, ed. Voxman.

Technic—Major and harmonic minor scales, major and minor triads—2 octaves, 16th notes.

Flute 5

Etudes: *Melodious and Progressive Studies*, Book 2, ed. Cavally; *Selected Studies*, ed. Voxman; *Grand Exercises Journaliers de Mecanisme*, Taffanel and Gaubert. Literature: *Sonatas*, Loeillet; *Duets*, Kuhlau; *Twenty-Four Short Concert Pieces*, ed. Cavally.

Technic—Major and melodic minor scales, chromatic and whole-tone scales, major and minor triads; dominant-7th chords, extended range, varied articulations.

Flute 6

Etudes: 24 *Etudes, Opus* 33, Andersen; 24 *Melodious Studies, Opus* 37, Boehm; 24 *Concert Studies from J. S. Bach*, arr. Schindler; *Grand Exercises Journaliers de Mecanisme*, Taffanel & Gaubert. Literature: *Sonatas*, Handel; *Syrinx*, Debussy; *Duets*, Kuhlau; *Scherzino*, Andersen; *Serenade*, Hue.

Technic—Scales in continuous patterns; major, minor, augmented triads; dominant-7th and diminished-7th arpeggios.

Flute 7

Etudes: *Etudes, Opus* 30, Andersen; 24 *Caprices, Opus* 26, Boehm. Literature: *Sonatas*, Bach and Handel; *Sonatas*, Telemann and Vivaldi; *Suites and Concertos*, Telemann and Vivaldi; *Andante in C*, Mozart.

Technic—Scales in thirds and sixths; arpeggios continued at increased speed.

Flute 8

Etudes: 24 *Etudes Artistique, Opus* 15, Andersen; 6 *Divertissements, Opus* 68, Kuhlau.

Literature: *Sonatas*, Bach; *Concertos in G and D*, Mozart; *Piece for Flute Alone*, Ibert; *Nocturne et Allegro Scherzando*, Gaubert; *Airs de Ballet from "Ascanio,"* Saint-Saens (Taffanel). Orchestral studies.

Technic—"Daily Scale and Arpeggio Routine"—Major scale, I triad, I 7th, diminished-7th on raised I, II 7th, V 7th, 2-octave chromatic scale on I, relative minor scale, minor I triad, minor V 7th.

FLUTE 9

Etudes: *Etudes et Exercises Techniques,* Moyse; *De la Sonorite,* Moyse; *Etudes, Opus* 63, Andersen. Literature: *Sonata,* Hindemith; *Night Soliloquy,* Kennan; *Fantasie,* Faure; modern solo material. Orchestral studies.

FLUTE 10

Etudes: *Virtuoso Studies, Opus* 60, Andersen; 30 *Caprices, Opus* 107, Karg-Elert; studies from the works of Moyse. Literature: *Poem,* Griffes; *Sonata,* Piston; *Sonata,* Prokofieff; other works from the modern repertoire.

OBOE — MUSIC 150 SECTION 07

OBOE 1

Studies: Gekeler, *Oboe Method,* Books I and II.
Solos: Franck, *Piece* V.
Technic—Elements of correct embouchure, tone production, breath support, articulation. Long tones, production of dynamics.

OBOE 2

Studies: Gekeler, *Oboe Method,* Book II.
Solos: Faure, *Piece.*
Technic—Refinement of tone, work on constant flow of tone, extension of range. Major scales quarter notes: to 6#, 6b.

OBOE 3

Studies: Barret, *Complete Oboe Method* (Progressive Studies); Bleuzet, *Technique of the Oboe,* Vol. I.
Solos: Barlow, *Winters Passed.*
Technic—Extension of range, increased flexibility and velocity, further work on tone coloring, articulations. Major and minor scales in pattern form: to 3#, 3b. Reed making.

OBOE 4

Studies: Barret, *Progressive Studies;* Bleuzet, *Technique of the Oboe,* Vol. I.
Solos: Schumann, *Three Romances.*
Technic—Continuation of range extension, increase of flexibility and velocity, tone coloring, articulations. Reed making. Major and minor scales in pattern form: to 6#, 6 b.

OBOE 5

Studies: Barret, *Complete Oboe Method* (Sonatas); Bleuzet, *Technique of the Oboe,* Vol. I.
Solos: Handel, *Sonatas* #1 and 2.
Technic—Continuation of flexibility and velocity, varied articulations. Major and minor scales in pattern form, I triad, V7 arpeggio.

OBOE 6

Studies: Barret, *Sonatas;* Bleuzet, *Technique of the Oboe,* Vol. I.
Solos: Hindemith, *Sonata.*
Technic—Flexibility and velocity, varied articulations. Major and minor scales, I triad, V7 arpeggio.

OBOE 7

Studies: Ferling, 48 *Etudes;* Bleuzet, *Technique of the Oboe,* Vol. II.
Solos: Handel, *Concerto in G Minor.*
Technic—Advanced technique. Major and minor scales in thirds and fourths, all articulations.

OBOE 8

Studies: Ferling, 48 *Etudes;* Bleuzet, *Technique of the Oboe,* Vol. II.

Solos: Marcello, *Concerto.*

Technic—Continuation of advanced technique. Major and minor scales in thirds and fourths, all articulations.

OBOE 9

Studies: Bleuzet, *Technique of the Oboe,* Vols. I, II, III; Andraud, *Vade Mecum.*

Solos: Mozart, *Concerto in C Major.*

Technic—Basic review of previous levels, all techniques, scales, intervals, arpeggios. Orchestral studies.

OBOE 10

Studies: Bleuzet, *Technique of the Oboe,* Vols. I, II, III; Andraud, *Vade Mecum.*

Solos: Goosens, *Concerto.*

Technic—Specialized technique. All techniques, scales, intervals, arpeggios. Orchestral studies.

CLARINET — MUSIC 150 SECTION 04

CLARINET 1

Fundamentals of tone production, concentrated on the Chalumeau register. *Study of the Clarinet,* Stubbins (Chalumeau register).

Technic—Major scales, major arpeggios, chromatic scale within the Chalumeau register—quarter notes.

CLARINET 2

Further refinement of tone production and articulation, including the Clarion register. *Study of the Clarinet* (Clarion register, duets, Stubbins' Etudes), Stubbins.

Technic—Major and harmonic minor scales, major and minor arpeggios, chromatic scale—2 octaves, quarter notes.

CLARINET 3

Increased flexibility and refinement of tone production and articulation throughout the complete practical range. *Study of the Clarinet* (Altissimo register; more difficult duets and Stubbins' Etudes), Stubbins; cantabile studies from Rose, *Thirty-two Studies.*

Technic—Major and harmonic minor scales, major and minor arpeggios—2 octaves; complete chromatic scale—8th notes.

CLARINET 4

Etudes: Studies in tone and phrasing from *Thirty-two Studies,* Rose. Literature: *Concert and Contest Collection,* Voxman: *Ballade,* Gade; *Romance,* Becker; *Chanson,* Gliere.

Technic—Major and harmonic minor scales, major and minor triads—2 octaves, 16th notes.

CLARINET 5

Etudes: Studies in articulation and execution from *Thirty-two Studies,* Rose. Literature: *Concert and Contest Collection,* Voxman: *Scherzo,* Koepke; *Adagio from Concerto, K.* 622, Mozart; *Fantasy-Piece, No.* 1, Schumann.

Technic—Major and melodic minor scales, chromatic and whole-tone scales, major and minor triads, dominant-seventh chords—extended range, varied articulations.

CLARINET 6

Etudes: *Forty Studies,* Book 1, Rose; *Method for Clarinet,* Part 3A (*Virtuoso Studies*), Langenus; Literature: *Promenade,* Delmas; *Allegretto grazioso* from *Sonata No.* 1, *Allegro appassionata* from *Sonata No.* 2, Brahms; *Canzonetta, Opus* 19, Pierne; *Sonatine,* Weinberger.

Technic—Scales in continuous patterns; major, minor, augmented triads; dominant 7th and diminished 7th arpeggios.

CLARINET 7

Etudes: *Forty Studies,* Book 2, Rose; 24 *Studies in All Keys,* Stark; *Bach for the Clarinet,* Part 2 (ed. Simon). Literature: *Fantasia and Rondo,* Weber; *Sonata,* Mendelssohn; *Five Bagatelles,* Finzi; *Lyrical Piece,* Barlow; *Sonata,* Hindemith.

Technic—Scales in thirds and sixths; arpeggios continued at increased speed.

CLARINET 8

Etudes: *Twenty Studies after Rode,* Rose; *Twenty-five Etudes de Technique,* Jeanjean; *Thirty Studies after Bach, Handel, Dont,* etc., Perier. Literature: *Concertino,* Weber; *Sonata in E flat,* Opus 167, Saint-Saens; *Andante et Scherzo,* Pierne; *Duo Concertante,* Weber.

Technic—"Daily Scale and Arpeggio Routine"—Major scale, I triad, I 7th, diminished—7th on raised I, II 7th, V 7th, 2-octave chromatic scale on I, relative minor scale, minor I triad, minor V 7 th.

CLARINET 9

Etudes: 18 *Etudes de Perfectionnement,* Jeanjean; *Twenty-two Studies in the Modern Style,* Perier. Literature: *Concerto,* K. 622, Mozart; *Three Fantasy-Pieces,* Opus 73, Schumann; *Three Pieces for Clarinet Solo,* Stravinsky. Orchestra studies: Mozart, Beethoven, Weber, Mendelssohn, Schumann, Berlioz.

CLARINET 10

Etudes: *Sixteen Studies in the Modern Style,* Jeanjean; *Twenty-two Studies in the Modern Style,* Perier. Literature: *Sonatas,* Brahms; *Premiere Rhapsody,* Debussy: *Cantegril,* Opus 72, Busser; *Duo concertante,* Milhaud. Orchestra studies: Wagner, Strauss, Rimsky-Korsakoff, 20th-century works.

BASSOON — MUSIC 150 SECTION 02

BASSOON 1

Studies: Weissenborn, *Bassoon Studies* (Ambrosio ed.). Book I.

Technic—Correct embouchure, tone production, breath support, articulation. Long tones, production of dynamics. Beginning of scale studies: major and minor to 3#, 3b.

BASSOON 2

Studies: Weissenborn, *Bassoon Studies* (Ambrosio ed.). Book I.

Solos: Weissenborn, *Song Without Words.*

Technic—Refinement of tone production and control, varied articulation. Long tones, extension of range. Continuation of scales studies; major and minor to 6#, 6b.

BASSOON 3

Studies: Weissenborn, *Bassoon Studies,* Book II; Jancourt, 38 *Progressive Exercises;* Oubradous, *Daily Scales and Exercises,* Book I.

Solos: Galliard, *Six Sonatas.*

Technic—Increased range, elementary studies in rhythm and articulation, exercises in tenor clef. Reed making. Major and minor scales to 3#, 3b, I triad.

BASSOON 4

Studies: Weissenborn, *Bassoon Studies,* Book II; Jancourt, 38 *Progressive Exercises;* Oubradous, *Daily Scales and Exercises,* Book I.

Solos: Pierne, *Solo de Concert;* Galliard, *Six Sonatas.*

Technic—Continued increase of range, exercises in rhythm and articulation, tenor clef study. Reed making. Major and minor scales to 6#, 6b, I triad.

BASSOON 5

Studies: Jancourt, 26 *Melodic Studies;* Oubradous, *Daily Scales and Exercises,* Book II.

Solos: Telemann, *Sonata in F Minor;* Hindemith *Sonata.*

Technic—Increased velocity and flexibility, increased range, varied articulation. Major and minor scales in thirds and fourths, I triad, V7 arpeggio: to 3#, 3b.

BASSOON 6

Studies: Jancourt, 26 *Melodic Studies;* Oubradous, *Daily Scales and Exercises,* Book II.

Solos: von Weber, *Concerto in F Major;* Vivaldi, *Concerto in Bb* (La Notte).

Technic—Continuation of velocity and flexibility studies, varied articulation, increase of range. Major and minor scales, in thirds and fourths, I triad, V7 arpeggio: to 6#, 6b.

BASSOON 7

Studies: Milde, 25 *Studies in All Keys;* Milde, *Concert Studies,* Book I or Orefici, *Studi Melodici.*

Solos: Bach, *Cello Suites;* Vivaldi, *Concerto in A Minor,* F.VII, n.2.

Technic—Advanced technique. Scales and arpeggios in all keys.

BASSOON 9

Studies: Milde, *Concert Studies,* Book II; Piard, *Scales Studies,* Book I.

Solos: Kohs, *Sonatina;* Vivaldi, *Concerto in A Minor,* F.VII, n.7.

Technic—Basic review of previous levels. Scales studies in all keys. Orchestral studies.

BASSOON 10

Studies: Milde, *Concert Studies,* Book II; Piard, *Scales Studies,* Book I.

Solos: Jacob, *Concerto;* Bozza, *Concertino.*

Technic—Study and analysis of different styles of execution relative to various composers. Scales in all keys. Orchestral studies.

SAXOPHONE — MUSIC 150 SECTION 11

SAXOPHONE 1

Studies: Klose-Gay, *Methods Complete pour Saxophone.*

Solos: Moyse, 40 *Little Pieces in Progressive Order.*

Technic—Correct embouchure, tone production, breath support, articulation. Long tones, production of dynamics. Beginning of scales studies: major and minor to 3#, 3b.

SAXOPHONE 2

Studies: Klose-Gay, *Methods Complete pour Saxophone;* Mule, 24 *Easy Studies After Samie.*

Solos: Moyse, 40 *Little Pieces in Progressive Order.*

Technic—Refinement of tone production and control, varied articulation. Long tones, extension of range. Scales studies: major and minor to 6#, 6b.

SAXOPHONE 3

Studies: Blemant, 20 *Melodic Studies,* Book I; Mule, 24 *Easy Studies after Samie.*

Solos: Gretchaninoff, *Two Miniatures;* Martini, *Gavotte.*

Technic—Extension of range, increased flexibility and velocity, continued articulation study, controlled dynamics. Major and minor scales, 8th notes, varied articulation. I triad: to 3#, 3b.

SAXOPHONE 4

Studies: Blemant, 20 *Melodic Studies,* Book I; Busser, 12 *Melodic Etudes.*

Solos: Gershwin, *Prelude #2;* Bozza, *Aria;* Franck, *Piece* II.

Technic—Continuation of flexibility and velocity, articulation, dynamics. Major and minor scales, 8th notes, I triad: to 6#, 6b.

SAXOPHONE 5

Studies: Mule, 18 *Studies After Berbiguier.*

Solos: Lantier, *Sicilenne;* Milhaud, *Danse.*

Technic—Continuation of flexibility and velocity, vibrato study, varied articulation. Major and minor scales, 16th notes, I triad, V7 arpeggio, varied articulation: to 3#, 3b.

SAXOPHONE 6

Studies: Mule, 18 *Studies After Berbeguier.*

Solos: Ibert, *Aria;* Eccles, *Sonata.*

Technic—Flexibility and velocity study, vibrato study, articulation. Major and minor scales, 16th notes, I triad, V7 arpeggio: to 6#, 6b.

SAXOPHONE 7

Studies: Mule, *Scale Studies,* Book I; Mule, *Daily Studies After Terschak;* Mule, 48 *Studies After Ferling.*

Solos: Heiden, *Sonata;* Rameau, *Rigaudon.*

Technic—Advanced technique. Scales, I triad, V7 arpeggio, in all keys.

SAXOPHONE 8

Studies: Mule, *Scale Studies,* Book I; Mule, *Daily Studies After Terschak;* Mule, 48 *Studies After Ferling.*

Solos: Creston, *Sonata;* Schmitt, *Legende.*

Technic—Advanced technique. Scales, I triad, V7 arpeggio, in all keys.

SAXOPHONE 9

Studies: Mule, 52 *Studies After Boehm, Terschak, and Furstenau;* or Mule, 30 *Studies After Soussman;* Viola, *Saxophone Method.*

Solos: Glazounov-Petiot, *Concerto;* Creston, *Concerto.*

Technic—Specialized technique. Basic review of previous levels.

SAXOPHONE 10

Studies: Mule, 52 *Studies After Boehm, Terschak, and Furstenau;* or Mule, 30 *Studies After Soussman;* Viola, *Saxophone Method.*

Solos: Ibert, *Concerto da Camera;* Tcherepnine, *Sonatine Sportiv;* Bonneau, *Caprice en Forme de Valse.*

Technic—Specialized technique. Study and analysis of different styles of execution relative to various composers.

FRENCH HORN — MUSIC 150 SECTION 06

FRENCH HORN 1

Fundamentals of French Horn playing; tone production, proper attack, breath control, formation of embouchure, holding the horn. Studies: *Method Book I,* Pottag-Hovey; *Method,* Marvin Howe; *Method,* Horner; begin scales.

FRENCH HORN 2

Further development of fundamentals as outlined in French Horn I. Studies: *Method Book II,* Pottag-Hovey; *Method,* Marvin Howe; *Method,* Horner; continue scales.

FRENCH HORN 3

Continue work on tone development and technique; extension of range; begin E-flat and E transposition; mechanical and hand muting; and reading in bass clef. Studies: Pottag-Hovey *Method Book II;* Schantl-Pottag *Preparatory Melodies to Solo Playing;* continue scales. Solos: *Solo Collections* by Remick, Witmark, Fischer.

FRENCH HORN 4

Continuation of French Horn III. Studies: Pottag-Hovey *Method Book II;* Schantl-Pottag *Preparatory Melodies to Solo Playing;* continue scales. Solos: Continue with Grade III; *Concerto No.* 3, Mozart.

FRENCH HORN 5

A review of all the fundamentals of horn playing; concentrated work on rhythm, scales, major and minor arpeggios; add transpositions D and G; begin lip trills.

Studies: Alphonse *Book I;* Pottag-Andraud *Book I;* Farkas *Method for Horn.* Solos: *Concerto No. I,* Mozart; *Melody,* Akimenko; *Intermezzo,* Gliere; *Romance,* Scriabin.

FRENCH HORN 6

Continuation of French Horn V; add transpositions C and A; begin double tonguing; introduction to band and orchestral literature; development of solo style. Studies: Alphonse *Book II;* Pottag-Andraud *Book I.* Solos: *Concerto No.* 2, Mozart; *Larghetto,* Chabrier; *Nocturnes,* Gliere; *Romanza,* Sinigaglia.

FRENCH HORN 7

Dominant and diminished sevenths; all transpositions; triple tonguing; continue band and orchestral literature study; emphasis on solo literature. Studies: Alphonse *Book III;* Pottag-Andraud *Book II.* Solos: *Concerto No.* 4, Mozart; *Reverie,* Glazounov; *Concert Rondo,* Mozart; *Rondo,* Cooke.

FRENCH HORN 8

Continuation of French Horn VII. Studies: Alphonse *Book IV;* Pottag-Andraud *Book II.* Solos: *Concerto No.* 2, Haydn; *Sonata,* Heiden; *Concert Piece,* Busser.

FRENCH HORN 9

Comprehensive study of solo literature, band and orchestral horn solos. Studies: Alphonse *Book V;* Gallay *Thirty Etudes.* Solos: *Villanelle,* Dukas; *Sonata,* Beethoven; *Morceau de Concert,* Saint-Saens.

FRENCH HORN 10

A coverage of all types of styles and techniques used for solos, band, orchestral and chamber music; required senior recital from memory. Studies: Alphonse *Book VI;* Michiels, *Twenty-four Etudes;* Gallay, *Twelve Etudes.* Solos: *Adagio and Allegro,* Schumann; *Sonata,* Hindemith; *Concerto No.* 1, Haydn; *Concertos,* R. Strauss.

TRUMPET — MUSIC 150 SECTION 14

TRUMPET 1

Fundamentals of trumpet playing: proper attack, breath control, formation of embouchure. Typical material: *Method Book I,* Edwards-Hovey; *Supplementary Studies,* Rubank; *Daily Embouchure Studies,* Goldman.

TRUMPET 2

Continued emphasis upon the fundamentals of trumpet playing, Major Scales, Arpeggios. Typical material: 40 *Etudes,* Hering; *Practical Studies,* Getchell; 30 *Classical Airs,* Job.

TRUMPET 3

Further development of tone, technique and range. Typical material: *Clarke Technical Studies; Petits Exercises,* Clodomir; Colin's Lip Flexibility. Solo: *Gaminerie,* Friboulet; *Mandoline,* Debussy.

TRUMPET 4

Continuation of Grade III, minor scales, Arpeggios. Typical material: *Beethoven Sonatas,* Gornston; 20 *Etudes Chantantes,* Clodomir; 20 *Etudes,* Mignonnes. Solos: *Valse Caprice,* Chaplaevsky; *Vocalises-Etudes,* Hettich.

TRUMPET 5

A review of all the fundamentals of trumpet playing. Concentrated work on rhythm, scales, arpeggios and proper breath control. Introduction to C and D transpositions. Typical material: 20 *Mechanical Etudes,* Clodomir; 100 *Etudes,* Sachse; *Daily Drills,* Schlossberg. Solos: *Modern Suite,* Fitzgerald; *Sonata Number VIII,* Corelli.

TRUMPET 6

Continuation of Grade V. Typical material: *Practical Studies* (Books I and II), Laurent; *Selected Studies,* Voxman. Introduction to E, E flat and F transpositions. Solos: *Sonatine,* Schmutz; *Sonatina,* Hartley; *Badinage,* Bozza.

TRUMPET 7

A study of the more advanced material with emphasis on recital literature. Typical material: Introduction to G and A transpositions. *Practical Etudes,* Laurent (Book III); 14 *Characteristic Etudes,* Arban. Solos: *Concerto,* Haydn; *Fantaisie,* Thome; *Sarabande et Rigaudon,* Clergue; *Fete Joyeuse,* Dallier.

TRUMPET 8

Introduction to orchestral literature and all transpositions used. Continued solo emphasis. Study of the C Trumpet. Typical material: *Etudes for Trumpet,* Brandt; 27 *Modern Etudes,* Arban; *Orchestral Passages,* Voisin. Solos: *Sonatine,* Casterede; *Fantaisie, Bedouin; Cantabile et Scherzetto,* Gaubert.

TRUMPET 9

Comprehensive study of Chavanne, 25 *Characteristic Studies,* Charlier's 36 *Etudes Transcendantes,* Glantz's 48 *Studies,* Wagner and Strauss *Orchestral Excerpts.* Continued solo emphasis. Solos: *Concerto,* Goedieke; *Sonata,* Hindemith; *Fantaisie, Theme and Variations,* Wormser.

TRUMPET 10

A coverage of all types of styles and techniques used for solo, orchestral, and ensemble playing. Required senior recital from memory. Typical material: 24 *Vocalises,* Borodogni; *Trait's Difficiles,* Foveau; *Orchestral Excerpts* (5 books), Bartold. Solos: *Concerto,* Wal Berg; *Legende,* Enesco.

TROMBONE — MUSIC 150 SECTION 13

TROMBONE 1

Fundamentals of tone production, embouchure development, breath support and attack. Typical material: *Clarke's Method; Daily Embouchure Studies,* Goldman; 170 *Studies,* Cimera.

TROMBONE 2

Major scales, arpeggios and legato style. Typical material: *Advanced Method,* Rubank; 36 *Exercises,* O. Blume.

TROMBONE 3

Studies in tone control, flexibility and articulation. Typical material: *Rochut's Book I,* Kopprasch's *Book I,* Colin's *Lip Flexibility.* Solos: *Adagio,* Haydn; *Canzonetta,* Pergolesi.

TROMBONE 4

Increase of range, minor scales and arpeggios, tenor clef and double and triple tonguing. Typical material: Mantia's *Trombone Virtuoso,* Rochut's *Book I,* Kopprasch's *Book II.* Solos: Galliard's *Sonatas,* Guilmant's *Morceau Symphonique,* Berlioz's *Recitative and Prayer.*

TROMBONE 5

A review of all the fundamentals of trombone playing. Typical material: *Trombone Virtuoso,* Mantia; *Melodious Etudes,* Rochut; *Daily Drills,* Schlossberg. Solos: *Andante and Allegro,* Barat; *Concert Piece Number* 5, Blazhevich.

TROMBONE 6

Increase of range, flexibility and introduction of alto clef. Typical material: *Melodious Etudes,* Rochut; *Clef Studies,* Blazhevich; 20 *Etudes of Perfectionnement,* Couillaud; *School of Sight Reading and Style* (Book I), LaFosse. Solos: *Concerto,* Handel; *Cavatine,* Saint-Saens.

TROMBONE 7

A study of the more advanced material with emphasis on recital literature. Introduction to Bass Trombone. Typical material: *Melodious Etudes,* Rochut; 36 *Studies for Trombone with "F" Attachment,* O. Blume (R. H. Fink); continuation

of *Couillaud's Series*, LaFosse's *School of Sight Reading and Style* (Books II and III); Remington's *Daily Routine*. Solos: *Second Concert Piece*, Vidal; *Concert Album for Bass Trombone and Piano*, Ostrander; *Sonata in E flat*, Sanders.

TROMBONE 8

Further emphasis on orchestral literature, clefs, and solos. Typical material: *Orchestral Excerpts*, Ostrander; *Method Book II*, LaFosse; continuation of *Couillaud's Series* and LaFosse's *School of Sight Reading and Style*. Solos: *Fantaisie*, Stokowski; *Morceau Symphonique*, Gaubert.

TROMBONE 9

Comprehensive study of Bach's *Cello Suites*, Wagner and Strauss *Orchestral Excerpts* and completion of LaFosse's *School of Sight Reading and Style*. Solos: *Sonata*, Hindemith; *Piece Concertante*, Salzedo.

TROMBONE 10

A coverage of all types of styles and techniques used for solo, orchestral and ensemble playing. Required senior recital from memory. Typical material: Continuation of *Cello Suites*, further study of *Orchestral Excerpts*. Blazhevich's *Concert Duets*. Solos: *Concertino D'Hiver*, Milhaud; *Sonata Concertante*, Hartley.

BARITONE HORN — MUSIC 150 SECTION 01

BARITONE HORN 1

Fundamentals of tone production, embouchure development, breath support and attack. Typical material: *Trumpet Method*, Edwards-Hovey; *Trombone Method*, Clarke; *Daily Embouchure Studies*, Goldman.

BARITONE HORN 2

Major scales, arpeggios, and continuation of Grade I. Typical material: 40 *Etudes*, Hering; 36 *Exercises*, O. Blume.

BARITONE HORN 3

Further development of tone, technique and range. Typical material: *Technical Studies*, Clarke; *Rochut's Book I, Lip Flexibility*, Colin.

BARITONE HORN 4

Increase of range, minor scales and arpeggios, double and triple tonguing. Typical material: *Trombone Virtuoso*, Mantia; *Melodious Etudes*, Rochut; *Beethoven Sonatas*, Gornston. Solos: *Vocalises-Etudes*, Hettich; *Sonatas*, Galliard.

BARITONE HORN 5

A review of all the fundamentals of baritone playing. Typical material: *Trombone Virtuoso*, Montia; *Melodious Etudes*, Rochut; *Daily Drills*, Schlossberg. Solos: *Modern Suite*, Fitzgerald; *Andante and Allegro*, Barat.

BARITONE HORN 6

Increase of range and flexibility. Typical material: *Melodious Etudes*, Rochut; *Practical Studies*, Laurent; *Selected Studies*, Voxman. Solos: *Sonatine*, Schmutz; *Concerto*, Handel; *Cavatine*, Saint-Saens.

BARITONE HORN 7

A study of the more advanced material with emphasis on recital literature. Typical material: *Melodious Etudes*, Rochut; *Practical Etudes*, Laurent; 14 *Characteristic Studies*, Arban. Solos: *Trumpet Concerto*, Haydn; *Fete Joyeuse*, Dallier; *Second Concert Piece*, Vidal.

BARITONE HORN 8

Velocity studies and further development of solo style. Typical material: *Etudes for Trumpet*, Brandt; 27 *Modern Etudes*, Arban. Solos: *Fantaisie*, Bedouin; *Morceau Symphonique*, Gaubert.

BARITONE HORN 9

A study of Charler's 36 *Etudes Transcendantes,* Glantz's 48 *Studies,* Chavanne"s 25 *Characteristic Studies.* Solos: *Sonatas for Trumpet and Trombone,* Hindemith; *Fantaisie, Theme, and Variations,* Wormser.

BARITONE HORN 10

A study of all types of styles and techniques used for solo, band, and ensemble playing. Required senior recital from memory. Typical material. Bach's *Cello Suites, Band Excerpts.* Solos: *Concerto,* Wal Berg; *Legende,* Enesco.

TUBA — MUSIC 150 SECTION 15

TUBA 1

Fundamentals of tone production, breath support, embouchure development. Typical material: *Basic Method,* Hinsley; *Cimera-Kuhn Book I; Supplementary Studies,* Rubank.

TUBA 2

Major scales and arpeggios, lip-slurring and dynamic control. Typical materials: *Etudes,* Vandercook.

TUBA 3

Extension or range, flexibility, legato style. Typical material: *Method Book I,* Eby; selected band parts.

TUBA 4

Continuation of Grade III. Typical materials: Completion of *Method Book I,* Eby, selected study from *Bell's Method.* Solos: *Concert Album for Tuba and Piano,* Ostrander.

TUBA 5

A review of all the fundamentals of tuba playing. Concentrated work on rhythm, scales, arpeggios and proper breath control. Typical material: *Advanced Method,* Voxman; *Etudes* (typical band passages), Vandercook. Solos: *Album for Tuba and Piano,* Ostrander.

TUBA 6

Playing of trombone or baritone parts an octave lower; minor scales, arpeggios, extension of range and legato style. Typical material: *Book I,* Rochut; 170 *Studies,* Cimera. Solos: *Chaconne,* Sowerby.

TUBA 7

Playing from cornet music for practice purposes, increase tonal focus and flexibility, emphasis on recital literature. Typical material: *Advanced Studies,* Cimera; *Advanced Studies,* Tyrrell; *Daily Routine and Studies,* Bell. Solos: *Air and Bouree,* Bach.

TUBA 8

Velocity studies and further development of solo style. Typical material: 70 *Etudes,* Blazhevich; 50 *Etudes,* Gregoriev. Solos: *Judas Maccabeus,* Handel.

TUBA 9

Further technical development and melodic training. Double and triple tonguing. Typical material: 40 *Etudes,* Bernard; *Wagner and Strauss Orchestral Excerpts;* continuation of both trumpet and trombone literature. Solos: *Sonatina,* Troje-Miller; *Sonata in G Minor,* Antoniotti.

TUBA 10

A coverage of all types of style and technique used for solo, orchestral and ensemble playing. Required senior recital from memory. Typical material: selected French Horn literature read in bass clef and a continuation of trombone and trumpet literature study. Solos: *Concertino,* LeClercq; *Fantasia do Concerto,* Boccalare (for Baritone adapted).

Class Voice — Music 150 Section 26 and 27

1A

Fundamentals of breath control, tone production and development of vocal technique. Songs selected from *Classic Italian Songs, Art Songs for School and Studio, Pathways of Songs, etc.*

1B

Continuation of 1A.

Voice — Music 150 Section 18

Applied Voice Majors and Music Education Majors with Voice as major applied field should give evidence of ability to sing simple standard or classic art songs with adequate tone quality and intonation. In those cases where formal musical training is lacking the candidate should be assigned to a preparatory status by the Auditions Committee until such time as he is prepared to meet requirements set in Level 1. Some previous piano study is advisable.

Music Education majors with voice as their major applied field must have repertoire in two foreign languages to satisfy degree requirements. Applied voice majors must have repertoire in three languages to satisfy degree requirements.

Level 1

Simple songs of moderate range in English, as from *Art Songs for School and Studio, Singable Songs, Pathways of Song, etc.*

Level 2

More difficult songs from such beginners' collections as those listed above.

Level 3

Literature contained in levels 1 and 2; songs selected from H. Lane Wilson's *Old English Melodies* (Boosey and Hawkes) and Potter's *Reliquary of English Song* (Schirmer) or easier songs of Handel and Purcell. Performance should be simple, straightforward and accurate and should demonstrate the beginnings of an awareness of style and sensitivity to text.

Level 4

Moderately difficult classic repertoire in English (Handel, Purcell, Haydn). Beginning songs from the *Anthology of Italian Song* (Schirmer). Romantic and contemporary repertoire in English as Edward Elgar, Edward MacDowell, Ernest Charles, Roger Quilter, Michael Head. Performance should demonstrate serious attention to phrasing in good taste and in keeping with stylistic demands of the period; evidence of increasing ability to apply knowledge gained in other music courses, notably Theory, to gain insight into the music performed; beginnings of the mastery of vocal technique as evidenced by increased resonance and range, ability to sustain the breath, ability to execute attacks and releases, control dynamic changes within the phrase.

Level 5

Continuation of classic Italian repertoire to include songs to develop flexibility and precise execution of embellishments. Italian Airs of Donaudy. English songs of greater musical complexity as Carpenter, Vaughn Williams, Duke, John Ireland. Performance should demonstrate an expansion of vocal technique and general musical literacy outlined in level 4.

Level 6

More difficult Italian Baroque Arias as Handel, Scarlatti, Pergolesi containing florid passages. Other Italian airs as outlined in levels 4 and 5 with greater command of even legato, open and well placed vowels, clear diction. For Music Education voice majors this level to include also simple Lieder of Franz, Schubert, Schumann; or French folk songs, Bergerettes (Weckerlin), or simpler songs of Hahn, Debussy, Goddard, etc. English songs as Barber's *Sure on This Shining Night*, Chandler's *The Children*, Nordoff's *There Shall be More Joy*. Entering Applied

voice majors should show a reasonable command of skills outlined in levels 4 and 5 and should have better than average vocal endowment (i.e. a good instrument). In addition, both Applied and Music Education majors should evidence in performance the beginnings of ability to project (i.e. audience contact or the ability to "put a song over").

LEVEL 7

Continuation of Classic Italian Literature. Easy oratorio and operatic arias. Lieder of the difficulty of Schubert's *Wohin,* Schumann's *Widmung,* Brahms' *Wie bist du meine Konegin,* or French art songs as Debussy's *Romance,* Faure's *Les Berceaux,* Goddard's *Chanson de Florian.* Songs in English as Griffes' *By a Lonely Forest Pathway;* Hageman, *At the Well.*

LEVEL 8

German Lieder as Schumann's *Er der Herrlichste von Allen;* Schumann's *Und wusstens die Blumen die Kleinen;* Schubert's *Ungeduld;* Brahms' *Vergebliches Standchen.* French art sons as Debussy's *Chevaux de bois, Mandoline;* Duparc's *Chanson Triste;* Faure's *En priere, Lydia;* Koechlin's *Si tu le veux;* Hahn's *L'heure exquise.* Moderately difficult oratorio and operatic arias. Songs in English of Castelnuovo—Tedesco, Dello Joio, Hindemith, Britten, etc.

LEVEL 9

Continuation of 19th Century Lieder with the addition of Wolf and Strauss. Continuation of 19th Century French Art Songs. Contemporary Italian Songs as Casella, Malipiero, Pizzetti, Respighi. Contemporary songs in English as Bernstein's *I Hate Music;* Ernst Bacon's *Quiet Songs;* Chanler's *Eight Epitaphs;* Vaughn Williams' *Songs of Travel;* Wagenaar *From a Very Little Sphinx;* Britten's *Winter Words.* Continuation of oratorio and operatic literature.

LEVEL 10

Arias from the cantatas of J. S. Bach or solo cantatas of Scarlatti, Handel, Pergolesi, etc. 19th and 20th Century Lieder of Mahler, Joseph Marx, Liszt, Wagner and later works of Wolf and Strauss. 19th and 20th Century French Songs of Debussy, Ravel, Poulenc, Milhaud, Satie, Honegger, Messaien. Continuation of Contemporary Italian literature. Contemporary songs in English of Copland, Barber, Rorem, Diamond, Vaughn Williams.

GRADUATE LEVEL

Song cycles as Schumann's *Frauen Liebe und Leben;* Brahms' *Four Serious Songs;* Mahler's *Songs of A Wayfarer;* Poulenc's *Banalitis;* Ravel's *Sheherazade;* Debussy's *Trois Ballades;* Britten *Charm of Lullabys;* Vaughn-Williams *On Wenlock Edge;* Hindemith's *Marienleben;* Barber's *Hermit Songs.* Complete operatic and oratorio roles. Songs of Berg, Schoenberg, Bartok, Stravinsky, DeFalla, Turina, Moussorgsky, Copland, Menotti, Cowell, Virgil Thompson.

PERCUSSION — MUSIC 150 SECTION 08

PERCUSSION 1

Stick position and motion, alternating single strokes, preparatory exercises for the roll, reading material containing single strokes. Haskell Harr, *Drum Method,* Book I, Exercises 1-20.

PERCUSSION 2

Roll, 5 stroke roll, 9 stroke roll, flam. Basic technique on bass drum, cymbals. Harr, *Drum Method,* Book I.

PERCUSSION 3

7 stroke roll, flam accent, single paradiddle. Basic technique on triangle, tambourine, wood block, claves and maracas. Harr, *Drum Method,* Book I complete.

PERCUSSION 4

Snare Drum: 13 rudiments. Haskell Harr *Drum Method,* Book II. Gardner *Modern Method* Book I; Gardner *Progressive Studies* Book II (complete), Podemski *Standard Snare Drum Method.*

Timpani: Beginning technique and tuning.

Xylophone: Beginning technique, all major scales.

PERCUSSION 5

Snare Drum: 26 rudiments. Gardner *Modern Method* Book I, Podemski, *Standard Snare Drum Method.*

Timpani: Exercises in Podemski *Standard Method,* Harr *Method for Tympani.*

Xylophone: All major and minor scales. Goldenberg *Modern School for Xylophone.*

PERCUSSION 6

Snare Drum: Gardner *Progressive Studies,* Book III. Goldenberg *Modern School for Snare Drum.*

Timpani: Goodman *Modern Method for Tympani* (section 1); 2 drum technique, tuning.

Xylophone: Goldenberg *Modern School.*

PERCUSSION 7

Snare Drum: Gardner *Progressive Studies* Book III (complete). Goldenberg *Modern School for Snare Drum.*

Timpani: Goodman *Modern Method for Tympani* (section 2); 2 drum technique, tuning.

Xylophone: Goldenberg *Modern School.* Gardner *Modern Method* Part II.

PERCUSSION 8

Snare Drum: Wilcoxon *Rudimental Swing Solos.* Orchestral excerpts.

Timpani: Goodman *Modern Method for Tympani.* Exercises for 3 timpani, orchestral excerpts.

Xylophone: Goldenberg *Modern School;* Price *Techniques and Exercises for Playing Triangle, Tambourine, and Castagnets.*

PERCUSSION 9

Snare Drum: Wilcoxon *Rudimental Swing Solos;* Pace *Variations of Drumming.*

Timpani: Goodman *Modern Method for Tympani.* (3 drums); orchestral excerpts.

Xylophone: Goldenberg *Modern School* (Etudes); Price *Techniques & Exercises for Playing Triangle, Tambourine, and Castagnets.*

PERCUSSION 10

Snare Drum: Gardner *Progressive Studies* Book IV; Price *Six Advanced Snare Drum Exercises.*

Timpani: Goodman *Modern Methods for Tympani.* 3 and 4 drums, orchestral excerpts, advanced tuning.

Xylophone: Goldenberg *Modern School* (Etudes). 3 and 4 hammer technique.

The Division of Art

OBJECTIVE

The Division of Art strives to provide professional and academic preparation in Art (painting, drawing, art history, design, modeling) and to fulfill the aesthetic and technical needs for Art in the University, the State, and the region.

PURPOSES

The Division of Art:

1. Educates students in all of the styles, techniques and history of painting, sculpture and the allied arts.
2. Stimulates experimentation, graduate study, and scholarly research in art.
3. Offers opportunities for students in all departments of the University to participate in painting, sculpture, the graphic arts, and in allied art exhibits.
4. Provides the University, the State, and area with student, faculty, and traveling art exhibits.
5. Prepares students for teaching and other professional careers.
6. Provides professional instruction for talented young artists of pre-university age.
7. Stimulates interest and appreciation of art in the community, the State, and the region.

General Information and Degree Requirements

The Division of Art is located in Science Hall. Included among its facilities are six studios, one lecture room, one modeling studio, and a well-equipped art gallery. The Division also has a large collection of slides and colored prints.

STUDENT ORGANIZATION

The Division of Art sponsors the *Art Club*.

THE BACHELOR OF ART DEGREE

The Bachelor of Art Degree is conferred upon any student who complies with the general regulations of the University concerning degrees, satisfies all entrance and departmental requirements, and completes the curricula in Art with an average of 2.0 (C) grade points per semester hour.

A freshman student who has less than a 1.0 (D) grade-point average at the close of his second semester is automatically suspended from the Division of Art. A freshman who has less than a 1.5 grade-point average at the close of his second semester is automatically placed on probation for the following semester. The terms of probation will be determined by the Scholarship Committee.

For admission to the junior year in the Division of Art, a student must have established a 2.0 (C) grade-point average.

Transfer students must establish transfer credit from other institutions during the first semester in which they are enrolled in the Division of Art.

ART CURRICULUM

Freshman Year	*First Sem.*	*Second Sem.*	*Course Description*
Art 11, 12	3	3	Drawing
Art 30	-	3	Appreciation of art
English 1, 2	3	3	Composition and rhet.
French or German 1, 2	3	3	French or German
Biol. or Phys. Sci. 1, 2	4	4	Intro. gen. course
Mil. or Air Sci. 1, 2 (M)	2	2	Mil. or Air Sci.
Phys. Ed.	1	1	Phys. Ed.
Electives	2		
	Women 33 hr.		
	Men 37 hr.		
Sophomore Year			
Art 113, 114	3	3	Painting
Art 121, 122	3	3	Fundamentals of design
Art 126	-	2	Modeling
English 5, 6	3	3	American lit.
French or German 3, 4	3	3	French or German cont'd.
Hist. 1, 2	3	3	Western civilization
Music 10	3	-	Appreciation of music
Mil. or Air Sci. 3, 4 (M)	2	2	Mil. or Air Sci.
Phys. Ed. (W)	1	1	Phys. Ed. (W)
	Women 37 hr.		
	Men 39 hr.		
Junior Year			
Art 105, 106	3	3	Survey of art
Art 117, 118	3	3	Painting
Art 211	-	3	Figure drawing
English 18	3	-	Advanced English comp.
English 163, 164	3	3	English literature
Econ. 51, 52, or Pol. Sci. 1, 2, or Sociol. 1, 160	3	3	6 hr. from this group
Bot. 204	4	-	Plant kingdom
Educ. 221	-	3	Audio-vis. res. for instrn.
	Women 37 hr.		
	Men 37 hr.		
Senior Year			
Art 213, 214, or 216, 217	6	6	Painting (6 hr. from group)
Art 220	2	-	Art and the schools
Art 225	-	3	Secondary school art
Art 250	3	-	Renaissance painting
Art 260	-	3	Modern painting
Humanities 141, 142	3	3	Great books
Electives	6	3	
	Women 38 hr.		
	Men 38 hr.		

Total 145 hr. (Women)

151 hr. (Men)

ART EDUCATION CURRICULUM

Freshman Year	*First Sem.*	*Second Sem.*	*Course Description*
Art 11, 12	3	3	Drawing
Art 30	-	3	Art appreciation
French or German 1, 2	-	3	Elem. French or German
English 1, 2	3	3	Composition and rhet.
Biol. or Phys. Sci. 1, 2	4	4	Intro. gen. course
Speech 11	3	-	Prin. of oral communic.
Phys. Ed.	1	1	
Mil. or Air Sci. 1, 2 (M)	2	2	
	Women 34 hr.		
	Men 38 hr.		
Sophomore Year			
Art 121, 122	3	3	Fundamentals of design
French or German 3, 4	3	3	Inter. French or German
English 5, 6	3	3	American lit.
Soc. Sci. 1, 2	4	4	Intro. gen. course
Hist. 1, 2	3	3	Ancient civilization
Phys. Ed. (W)	1	1	
Mil. or Air Sci. 3, 4 (M)	2	2	
	Women 34 hr.		
	Men 36 hr.		
Junior Year			
Art 105, 106	3	3	Survey of art
Art 113, 114	3	3	Painting
Art 126	-	2	Modeling
English 18	3	-	Advanced English comp.
English 138 or 139	-	3	Eng. lit. (1600-1744 or 1744-1798)
English 163, 164	3	3	English lit.
English 173	-	3	Poetry
Educ. 105, 106	3	-	Human growth and develop.
Educ. 221	3	-	Audio-vis. res. for instrn.
Educ. 100	1	-	Orientation and selection
	Women 39 hr.		
	Men 39 hr.		
Senior Year			
Art 117, 118	3	3	Painting
Art 220	-	2	Art and the school
Art 225	-	3	Sec. school art
Art 260	-	3	Modern painting
Bot. 204	4	-	Plant kingdom
Educ. 120	4	-	Principles of teaching
Educ. 124	6	-	Student teaching (sec.)
Educ. 168	2	-	Materials and methods
Health Educ. 102	-	2	Sec. school hlth prog.
Music 10	-	3	Apprec. of music
Electives	-	2	
	Women 37 hr.		
	Men 37 hr.		

Total 144 hr. (Women)

150 hr. (Men)

COURSES OF INSTRUCTION IN ART

1. Creative Expression in the Fine Arts. I, II. 2 hr. Primarily for Elementary Education majors. An exploratory course designed to familiarize the student with the possibilities of creative expression through graphic media; to acquaint the student with the advantages and limitations of the various media; and to investigate the adaptability of these media at various grade levels.

2. Creative Expression in the Applied Arts. I, II. 2 hr. A course similar to Art 1 but employing materials such as clay, plastelin, paper, felt, gasso, plaster, and the like, as a means of creative expression.

11 or 111, 12 or 112. Drawing. I, II. 3 hr. per sem. Freehand drawing in pencil and charcoal.

30. Appreciation of the Fine Arts. I, II. 3 hr. A study of outstanding works of art from times past as well as from the present day. Topics treated include: the materials with which the artist works; sources of the art impulse; and the relations of art to the civilization producing it.

105, 106. Survey of Art. I, II. 3 hr. per sem. History of art from pre-historic times to the present.

113, 114. Painting. I, II. 3 hr. PR: Art 11, 12. Beginning watercolor and oil.

115. Scientific Drawing. I, II. 3 hr. Freehand drawing primarily for premedical and predental students.

117, 118. Painting. I, II. 3 hr. PR: Art 113, 114. Second semester watercolor and oil.

121, 122. Fundamentals of Design. I, II. 3 hr. per sem.

123. Lettering. II. 2 hr. Principles of design involved in lettering and their application. Offered alternate years.

126. Modeling. I, II. 2 hr. PR: Consent. Introductory course in sculpture.

151, 152. Special Problems. I, II. 1-3 hr. per sem.

211. Figure Drawing. II. 3 hr. PR: Art 11 or 111, 12 or 112, and/or consent. Study of the construction of the figure. Drawing from the draped and partially draped model. Offered alternate years.

213. Painting. I. 3 hr. PR: Art 113, 117, and consent. First semester advanced watercolor.

214. Painting. II. 3 hr. PR: Art 213 and consent. Second semester advanced watercolor.

216. Painting. II. 3 hr. PR: Art 114, 118 and consent. First semester advanced oil painting.

217. Painting. II. 3 hr. PR: Art 216 and consent. Second semester advanced oil painting.

220. Art and the Schools. I. 2 hr. PR: 4 hr. of art including a minimum of 2 hr. studio.

221. Administration and Supervision of Art. II. 2 hr. PR: Art 220. Mainly for administrators and school principals who wish to become informed about art programs and the philosophies underlying them.

225. Secondary School Art. II. 3 hr. PR: Art 11 or 111, 12 or 112, 121, 122, 113, 114, and consent. Information and working skills desirable for the teaching of art on the secondary school level. Offered alternate years.

241. Medieval Architecture. I or II. 3 hr. PR: Art 105, 106. A study of architecture from the time of Constantine to the Renaissance. Offered alternate years.

250. Renaissance Painting. I. 3 hr. PR: Art 105, 106. A study of painting in Italy from Cimebue to Tiepolo; the Renaissance in Western Europe; a brief consideration of baroque and rococo painting as outgrowth of the Renaissance.

260. Modern Painting. II. 3 hr. PR: 105, 106. Developments in painting from the French Revolution to the present day.

271. American Architecture. I or II. 3 hr. PR: Art 105, 106. Developments in architecture in North America from Pre-Columbian times to the present day. Emphasis will be placed on the architecture of the United States. Offered alternate years.

275. Latin American Art. I or II. 3 hr. PR: Consent. From Pre-Columbian times to the present. Outstanding examples of the various periods will be considered. Offered alternate years.

290. Study of Original Works of Art. 6 hr. PR: Art 105, 106, and consent of the Division Chairman. Directed study in the museums and libraries in an urban center such as Washington or New York; a study of the architectural developments of the locality. Offered alternate years.

GRADUATE STUDY

The Division of Art offers the Master of Arts degree in Art. Please refer to the 1965-66 Graduate School *Announcements* for further details regarding admission, requirements, curriculum, and courses.

The Division of Drama

OBJECTIVE

The Division of Drama strives to provide professional and academic preparation in drama (dramatic literature, theatre, and oral interpretation), and to satisfy the aesthetic need for these arts in the community and region.

PURPOSES

The Division of Drama:

1. Fosters a climate of creativity in drama for students, faculty, and the community.
2. Instills an appreciation of drama in our students and in our audiences.
3. Promotes integration of the creative arts.
4. Prepares students for teaching and other professional careers.
5. Develops high professional quality in drama.
6. Encourages scholarly research, experimental work, and graduate study in all aspects of drama.
7. Serves other areas of the University academically and culturally.
8. Provides opportunities for the University community to associate with and learn from professional artists.
9. Provides the benefits of drama to the community, the State, and the region.

General Information and Degree Requirements

The Division of Drama of the Creative Arts Center is associated with national educational theatre organizations and represents, in its basic academic structure, generally accepted practices and procedures.

The faculty consists of artists-teachers with specialized and outstanding backgrounds in both academic and professional performance experiences. Each member of the faculty assumes course work and laboratory supervision in his special field of emphasis. All areas of drama and theatre are included in the curriculum. Regular series of theatre productions are maintained as practical laboratories in the Drama program.

DRAMA ORGANIZATIONS

UNIVERSITY THEATRE

The Division of Drama produces, under the name University Theatre, a complete season of faculty directed play productions in the main campus theatre. The season is open to the public under regular theatre management procedures with box office facilities offering the sale of season and reserved seat tickets.

STUDIO THEATRE

The Division of Drama maintains separate facilities for the production of new and unusual plays, and for classical and experimental works which may not find a voice on the commercial stage. The studio program provides a training ground for actors, writers, directors, designers, and technicians. Plays in this theatre are directed by faculty or advanced students and are open or closed to the general public, depending on the purpose of the production.

ONE-ACT PLAY PRODUCTIONS

A regular laboratory performance schedule is maintained for student directed and acted one-act plays. During the academic year as many as sixty productions are performed before student audiences.

ORAL INTERPRETATION

Students enrolled in oral interpretation courses offer individual and group recitals in regularly scheduled performances open to the public. A wide range of special programs are also offered to civic, religious and other organizations, including radio and television appearances.

VERSE CHOIR

The Division of Drama sponsors a verse choir for major and non-major students with scheduled public performances.

STUDENT ORGANIZATION

The Division of Drama sponsors a chapter of the national Drama fraternity *Alpha Psi Omega.*

THE BACHELOR OF FINE ARTS IN DRAMA

The B.F.A. Degree is conferred upon any student who complies with the general regulations of the University concerning degrees, satisfies all entrance and Division requirements, and completes one of the following options in the curriculum of the Division of Drama with a total average of 2.0 (C) grade points per semester hour.

A. Acting-Directing option.

B. Design and Technical Theatre option.

A freshman student who has less than a 1.0 (D) grade-point average at the close of his second semester is automatically suspended from the Division of Drama. A freshman who has less than a 1.5 grade-point average at the close of his second semester is automatically placed on probation for the following semester. The terms of probation will be determined by the Scholarship Committee.

For admission to the junior year in the Division of Drama, a student must have established a 2.0 (C) grade-point average.

Transfer students must establish transfer credit from other institutions during the first semester in which they are enrolled in the Division of Drama.

Students are responsible for correctly fulfilling all requirements.

TEACHER CERTIFICATION

Certification in Drama is a part of the combined Speech-Drama teacher-preparation program under the College of Arts and Sciences.

GRADUATE STUDY

The Division of Drama offers a graduate option for the Master of Arts degree in Speech, College of Arts and Sciences. See the 1965-66 Graduate School *Announcements* for further details regarding admission, requirements, curriculum, and courses.

DIVISION OF DRAMA COMMITTEE

Scholarship Committee: Professors Boyd, *Chairman,* and Burrows; Assistant Professor Ford.

APPLIED DRAMA CURRICULUM

Freshman Year	*First Sem.*	*Second Sem.*	*Course Description*
Drama 51; 50	3	3	Vocal tech; Oral interp.
Drama 100; 75	3	3	Stagecraft; Acting
Drama 185; 176	3	3	Theat. hist.; Theatre makeup
Drama 101	1	-	Theatre workshop
English 1, 2	3	3	Composition and rhet.
Elective	3	3	
Art 30 A[1]	3	-	Art apprec.
Core Curriculum B[1]	-	3	
Phys. Ed.	1	1	
Mil. or Air Sci. (M)	2	2	
	Women 39 hr.		
	Men 43 hr.		
Sophomore Year			
Drama 102; 103	3	3	Scene des.; Theatre light.
Drama 150 or Art 121	3	-	Adv. oral interp.; drawing
Drama 160	3	3	Theat. perform. & rehearsal
Drama 180	-	3	Directing
Speech 145 or Art 12, 112	-	3	T.V. survey; drawing
Art 105 or 106 A[1]	3	-	Drawing
Core Curriculum B,[1] C[1]	3	6	
Phys. Ed. (W)	1	1	
Mil. or Air Sci. (M)	2	2	
Elective[2] (Music 150)	2-3	-	Voice
	Women 37-38 hr.		
	Men 39-40 hr.		
Junior Year			
Drama 104	3	-	Theatre costumes
Drama 161	3	3	Perform. & rehearsal lab.
Drama 202 or 275	3	6	
Drama 200 Level Courses[2]	-	-	Adv. scene des.; Adv. act.
Music 10 A;[1] 138 A[1]	3	3	M. apprec.; Intro. to mus. hist.
Core Curriculum C[2]	3	3	
English 142	3	-	Shakespeare
Elective[2]	-	3	
		-	
	Women 36 hr.		
	Men 36 hr.		
Senior Year			
Drama 200 Level Courses[2]	3	3	Theat. perform. & rehearsal lab.
Drama 260	3	3	Adv. directing; Adv. theat. hist.
Drama 280; 285	3	3	Theat. aesthetics & criticism
Drama 286	-	3	
Core Curriculum B[1]	3	6	
Elective	6		
	Women 36 hr.		
	Men 36 hr.		

Total 148 hr. (Women)

154 hr. (Men)

Students may include art and music courses taken as electives in addition to required courses as listed. All course programs must be approved by a faculty adviser in Drama.

[1]See page 46 for explanation of the University Core Curriculum Requirements.
[2]Choice of courses depends upon option student is following. This will be determined in counsel with the adviser.

COURSES OF INSTRUCTION IN DRAMA

50. Oral Interpretation. I, II. 3 hr. Development of mental and emotional responsiveness to written material. Techniques of communicating such material to others through oral reading. Open to all students.

51. Vocal Techniques in Acting. I, II. 3 hr. Emphasis on vocal development and voice training for actors.

75. Acting. I, II. 3 hr. Drills for developing muscular control for overcoming inhibitions, for rendering the body expressive of thought and emotion. Coordination of mind and body. Open to all students.

100. Stagecraft. I, II. 3 hr. Lecture course in elementary problems of scenery construction, scene painting, and stage lighting.

101. Theatre Workshop. I, II. 1-3 hr. Laboratory for production of University plays and informal stimulation of interest in creative arts. Open to all students. Max. credit 6 hr.

102. Scene Design. I. 3 hr. Introduction to problems of creating stage settings. Elementary consideration of styles of production. Practice in techniques of scene design.

103. Theatre Lighting Design. I, II. 3 hr. Basic techniques in stage lighting. Opportunity for practical experience on University Theatre lighting crews.

104. History and Design of Costumes. I, II. 3 hr. A survey of historical stage costuming with basic design including rendering techniques of costumes for the stage.

150. Advanced Oral Interpretation. I. 3 hr. PR: Drama 50. Content and form of various types of literature, and advanced techniques for their oral presentation.

160. Theatre Performance and Rehearsal Laboratory. I, II. 1 to 3 hr. PR: Consent. Participation in assigned theatre projects. Appreciation of creativity and performance techniques in theatre. Majors only. Max. credit 6 hr.

161. Theatre Performance and Rehearsal Laboratory. I, II. 1 to 3 hr. PR: Drama 160 or consent. Participation in assigned theatre projects. Appreciation of creativity and performance techniques in theatre. Majors only. Max. credit 6 hr.

176. Theatre Makeup. I. 3 hr. Lecture-laboratory course in art of stage makeup. Practical experience provided by doing makeup for University Theatre productions.

177. Theatrical Methods and Practices. I, II. 2 hr. Basic techniques and terminologies of acting, scene construction, lighting, properties, costuming, directing, and theatre history. (Must accompany Drama 178 for credit). Non-majors.

178. Theatrical Methods and Practices Laboratory. I, II. 1 hr. Laboratory accompanies Drama 177. Participation in actual production of University Theatre and Children's Theatre plays. Non-majors.

179. Directed Theatre Activities. I, II. 1 to 3 hr. Assigned theatre projects, supervised by faculty. Non-majors.

180. Directing. I, II. 3 hr. Fundamentals of directing stage plays. Emphasis on work of director in relation to actor, stage, business, composition, movement and rehearsal schedule.

185. History of the Theatre. I. 3 hr. An examination of the major periods of theatre history through study of the important playwrights of each era.

202. Advanced Scene Design. II. 3 hr. PR: Drama 100 and 102, or consent. Lecture and laboratory in theories of scene design for stage and television, including actual construction of designs. Open to juniors, seniors, and graduate students.

203. Advanced Scenery and Lighting. I, II. 3 hr. PR: Drama 100 or consent. A more technical study of scenery and lighting problems than is offered in Drama 100 and 103. Students are given the opportunity for study through independent investigation and research.

250. Advanced Problems in Interpretation. I, II. 3 hr. PR: Drama 50 and consent. Designed to deal with individual problems of advanced students in interpretation.

251. Professional Reading. II. 3 hr. PR: Consent. Intensive training in interpretation. Designed to meet needs of individual. Full-length public recital prepared and presented. Limited enrollment.

252. Art of Storytelling. S. 3 hr. PR: Consent. Principles involved in effective presentation of stories, with practical experience in classroom and before audiences. Stories of all types for adults and children studied.

260. Theatre Performance and Rehearsal Laboratory. I, II. 1 to 3 hr. PR: Drama 161 or consent. Participation in assigned theatre projects. Appreciation of creativity and performance techniques in theatre. Majors only. Max. credit 6 hr.

275. Advanced Acting. II. 3 hr. PR: Drama 75 and consent. Characterization, script analysis, style, theories, and techniques. Designed to meet the needs of individual students.

280. Advanced Directing. II. 3 hr. PR: Drama 180 or consent. Emphasis on the work of the director as an integrating artist. Display of high level of proficiency in direction of a one-act play required of all students enrolled.

281. Theatre Dialects. I. 3 hr. PR: Consent. Study and mastery of fifteen common dialects used in theatre, motion pictures and television.

282. Creative Dramatics. II. 3 hr. PR: Drama 75 or consent. The study and practice of creative dramatic activity as a method of learning and self-development for children.

283. Playwriting. II. 3 hr. PR: Consent. Development of creative ability in dramatic composition. Study of techniques and problems of playwriting. Of cultural value, but primarily a writing course.

285. Advanced History of Theatre. I. 3 hr. Historical survey of theatre from primitive times to present. Includes both oriental and occidental theatres.

286. Drama Criticism and Aesthetics. II. 3 hr. A survey of chief critical and aesthetic theories of drama—ancient, modern, and contemporary.

The College of Education

FACULTY

Howard Bushnell Allen, B.S., M.S., Ph.D., *Professor Emeritus of Education* (1963), 1920.

Andrew Kolb Ault, M.Ed., *Instructor in Education* (1961), 1952.

Benjamin Hasting Bailey, A.B., M.Ed., Ed.D., *Associate Professor of Education* (1959).

Robert Dodge Baldwin, A.B., A.M., Ph.D., *Professor Emeritus of Education* (1962), 1931.

Laddie Reed Bell, A.B., M.A., Ed.D., *Associate Professor of Education and Coordinator of Graduate Cooperative Programs* (1963), 1962.

Earl Ruffner Boggs, A.B., M.A., Pe.D., Ph.D., *Professor of Education* (1960).

Winifred Marie Booth, B.S., M.A., *Assistant to the Dean and Lecturer in Education* (1961), 1930.

Thomas John Brennan, B.S., M.A., Ed.D., *Professor of Education and Coordinator of Industrial Education* (1962), 1941.

Sara Ann Brown, B.S., M.S., Ph.D., *Professor of Education* (1955), 1946.

Russell Clarke Butler, B.S., M.S., Ph.D., *Professor of Education* (1956), 1944.

Wincie Ann Carruth, B.S., M.S., Ph.D., *Professor of Education* (1960), 1957.

Cynthia Rose Cipolloni, B.S., M.A., *Instructor in Education* (1964).

George Henry Colebank, A.B., M.A., *Associate Professor Emeritus of Education* (1959), 1929.

Kermit Alderson Cook, A.B., M.A., Ph.D., *Professor of Education* (1959), 1935.

Glennis Hudkins Cunningham, A.B., M.A., *Instructor in Education* (1956).

Evelyn DiTosto, B.S., M.A., *Instructor in Education* (1963), 1962.

Wilson Irvin Gautier, A.B., M.A., Ed.D., *Assistant Professor of Education* (1964), 1960.

Keith Elden Glancy, B.S., M.S., Ph.D., *Associate Professor of Education* (1965).

Mary Jane Wasmuth Glasscock, B.M., M.M., *Instructor in Education* (1958), 1943.

Delvin Dae Harrah, B.A., M.A., Ed.D., *Associate Professor of Education and Coordinator of Internship Programs* (1962).

Harry Bruce Heflin, A.B., A.M., Ph.D., *Professor of Education* (1964).

Arthur Newsome Hofstetter, A.B., M.A., Ed.D., *Professor of Education and Coordinator of Research and Field Services* (1962), 1955.

Frederick John Holter, Jr., A.B., M.A., Ph.D., *Professor of Education* (1964), 1938.

Leo Horacek, B.M.E., B.M., M.M.E., Ph.D., *Associate Professor of Education* (1964), 1960.

Nita Jean Houchins, B.S., B.S.Ed., M.A., *Instructor in Education* (1963), 1962.

Earl Hudelson, A.B., M.A., Ph.D., *Professor Emeritus of Education* (1959), 1920.

Stanley Oliver Ikenberry, B.S., M.A., Ph.D., *Assistant Professor of Education* (1962).

Arreta Lee Jaranko, A.B., M.A., *Instructor in Education* (1963), 1962.

Walter Henry Jarecke, B.S., M.Ed., Ed.D., *Professor of Education and Coordinator of Counselor Training* (1962), 1953.

William K. Katz, B.S., M.S., Ed.D., *Assistant Professor of Education and Chairman of Elementary Education* (1962), 1953.

Warren George Kelly, B.S., M.S., *Assistant Professor of Education* (1957).

Eddie Clifton Kennedy, A.B., A.M., Ed.D., *Professor of Education and Coordinator of Reading Center* (1962), 1953.

Marvin Robert Lee, B.S., M.A., *Instructor in Education* (1960), 1956.

Rogers McAvoy, B.A., M.A., *Instructor in Education and Coordinator of Educational Psychology* (1963), 1961.

Delmas Ferguson Miller, A.B., M.S., Ph.D., *Professor of Education and Chairman of Secondary Education* (1960), 1950.

James Myers Mullendore, B.S., M.A., Ph.D., *Professor of Education* (1964), 1963.

Robert Hudkins Neff, B.S., M.S., Ed.D., *Associate Professor of Education and Coordinator of Special Education* (1962), 1950.

Ruth Douglas Noer, B.S., M.S., *Professor Emeritus of Education* (1963), 1925.
Angelo Joseph Orlandi, B.A., M.A., *Instructor in Education* (1963), 1959.
Dickson Ward Parsons, A.B., M.S., Ph.D., *Professor Emeritus of Education* (1951), 1923.
John Semon, A.B., M.S., *Associate Professor of Education* (1960), 1959.
Robert Bowser Smawley, B.S., M.S., Ph.D., *Assistant Professor of Education* (1964).
Forrest Wilbur Stemple, Ph.D., *Professor Emeritus of Education* (1952), 1931.
Judith McKay Thackston, B.S.Ed., *Instructor in Education* (1964).
Roman Joseph Verhaalen, B.A., M.A., Ph.D., *Professor of Education* (1964).
William Vaughn Wagner, B.S., M.A., Ed.D., *Associate Professor of Education* (1960), 1959.
Paul William Watson, B.A., M.A., *Instructor in Education and Research Associate* (1964).
Harry Grove Wheat, A.B., A.M., Ph.D., *Professor Emeritus of Education* (1956), 1935.

Clerical Personnel

Nancy Lou Baily, *Secretary*
Mary Margaret Johnson, *Secretary*
Mary Ellen Labiosa, *Secretary*
Mary Margaret Lopez, *Secretary*
Elizabeth Wilmoth Porter, *Secretary*
Constance Joyce Sergent, *Secretary*
Janet Marie Vallelonga, *Secretary*
Jacqueline Reed Walker, *Secretary*

THE UNIVERSITY HIGH SCHOOL STAFF

Delmas Ferguson Miller, A.B., M.S., Ph.D., *Director* (1960), 1950.
E. Grant Nine, A.B., M.A., *Principal* (1960), 1956.
Wayne Gardner Baker, M.A., *Teacher, Industrial Arts* (1963).
Anna Brochick, A.B., M.A., *Instructor, English* (1939), 1938.
Sara Elizabeth Brock, B.S., M.S., *Instructor, Physical Education* (1962), 1961.
Allen Roy Bryant, B.S., M.S., *Instructor, Vocational Agriculture* (1956).
Janet Duffield Callahan, B.S., *Teacher and Librarian* (1960).
Michael Angelo Caruso, B.S., M.A., *Instructor, Biological and Physical Science* (1960), 1956.
Ruth Elizabeth Cook, B.S.H.E., M.S.H.E., *Instructor, Vocational Home Economics* (1951).
Gloria Jeanne Cunningham, B.S., M.S., *Instructor, Commerce* (1963), 1958.
Ann Reed Dickey, B.S., *Teacher, Commerce* (1964).
Catherine McKelvey Dorsey, B.A., M.A., *Instructor, Mathematics* (1948), 1943.
Dorothy Catherine Engle, A.B., M.A., *Instructor, English* (1956), 1955.
Homer Milton Fizer, B.S., M.S., *Instructor, Physical Education* (1947), 1940.
Donald Lee Fuhr, A.B., *Teacher, Social Studies* (1964).
William Post Hawley, B.S., *Teacher, Biological Science* (1964), 1963.
Sara Evelyn Logan, B.S., M.A., *Teacher, Mathematics* (1964).
David Howard Rienheart Loughrie, LL.B., *Teacher, Social Studies and Integrated Studies* (1963).
Sam Madia, B.S., M.A., *Instructor, Art* (1956), 1955.
Joann Virginia Massullo, B.S., *Teacher, French* (1964).
Lillie Dale Morgan, A.B., A.M., *Instructor, English* (1963), 1962.
Oleta Reed Post, B.S., M.A., *Instructor, English* (1954).
Louise Boggess Roberts, B.S., M.A., *Instructor, Vocational Home Economics* (retired), (1960), 1928.
Kate Meredith Roller, A.B., M.A., *Instructor, Arts and Crafts* (retired), (1955), 1927.
Richard Neil Ryan, B.S., M.A., *Instructor, Social Studies* (1962), 1959.
Alice V. Semon, B.S., M.A., *Instructor, Social Studies* (1962), 1938.
Joseph Paul Talerico, A.B., M.A., *Instructor, Social Studies and Visual Aids* (1950), 1948.

May Landstreet Wilt, B.S., M.A., *Instructor, Mathematics* (retired), (1964), 1925
Darrell Elroy Wood, B.M., M.M., *Instructor, Music* (1959).
Yvonne Mildred Woofter, A.B., M.A., *Instructor, English* (1941), 1936.

Clerical Personnel

Barbara Leonard Barnes, *Secretary*
Norma Jean Carter, *Stenographer*
Mary Anne Sirilla Talbott, *Stenographer*

VISITING COMMITTEE

Ira L. McDowell, *Assistant Principal, Parkersburg High School* (Chairman).
R. S. Dispanet, *Superintendent, Morgan County Schools, Berkeley Springs.*
I. L. Mitchell, *Director of Educational Services, Concord College, Athens.*
Robert Patterson, *Greenbrier County High School, Ronceverte.*
Genevieve Starcher, *Director, Division of Teacher Preparation and Professional Standards, State Department of Education, Charleston.*

General Information

In 1901 a Department of Education was established in the College of Arts and Sciences. Subsequently, departments of education evolved in the College of Engineering and the School of Music. In 1927, the College of Education was established by the Board of Governors of the University to unify professional training for school service.

The College of Education provides training in all areas of specialization in public-school and higher education. It has resident courses of instruction, facilities for research, the University High School and cooperating public schools for observation, student teaching, directed supervision, and experimentation.

The College of Education is accredited by the National Council for Accreditation of Teacher Education for the preparation of elementary teachers, secondary teachers, school service personnel and school administrators, with the Doctor's Degree as the highest degree approved.

STUDENT ORGANIZATIONS

Kappa Delta Pi

Kappa Delta Pi, national honorary and professional education society, installed Alpha Upsilon Chapter at the University on July 21, 1927. Election is conditioned upon high scholarship and desirable personal and professional qualities.

Phi Delta Kappa

Epsilon Nu Chapter of Phi Delta Kappa, a national fraternity for men in Education, was established November 18, 1961. Membership, by invitation, is composed of leaders and students in Education who are dedicated to research, leadership, and service in Education.

Student National Educational Association

S.N.E.A., a national professional Education organization, was chartered at the University on March 5, 1952, and is affiliated with the National Education Association and the West Virginia Education Association. Students interested in teaching may apply for membership.

Industrial Arts Club

The Industrial Arts Club, an organization designed to promote industrial arts education at the University, was established in September, 1947. Membership is

open to students engaged in industrial arts education and carries with it membership in the West Virginia Industrial Arts Association and the American Industrial Arts Association. Interested students may apply for membership.

TEACHER PLACEMENT

The University maintains a placement service for all students and alumni who are candidates for positions suitable to their preparation. Anyone who is a candidate for a school position will, upon application, be furnished registration blanks of the Placement Service. All requests for candidates will be referred to that service.

ORIENTATION AND SELECTION

To assist students in choosing a career in the area of teaching and to maintain adequate standards for admission to teacher-training, the College of Education requires all students pursuing teacher-education programs to participate in and complete satisfactorily the Orientation and Selection Program. The student is enrolled in this program concurrently with the first course taken in the College. The transfer student who has completed the first course in Education at another institution is required to complete the requirements of the Orientation and Selection Program at the University.

ADVISER

When the student enters the College of Education he is assigned an adviser who will help him plan his program of work—required courses, electives, examinations, conference courses, etc. Although the adviser desires to be helpful, this does not absolve the student from becoming familiar with all pertinent regulations and planning his program of work in accordance with the objective of his choice.

WEST VIRGINIA BOARD OF EDUCATION REGULATION FOR CERTIFICATION OF TEACHERS

The West Virginia Board of Education requires that 100 of the 128 semester hours required for certification shall be completed in regularly scheduled campus courses. The 28 hours of permissible nonresidence courses may be earned by extension, home study (correspondence), radio, television, special examinations, and/or military service.

RENEWAL OF PROFESSIONAL CERTIFICATES

Effective September, 1963, all courses for renewal of Professional Certificates are selected in terms of the teacher's objectives for the improvement of instruction and must be recommended by the county superintendent on a form supplied by him. The student should have this completed form when he registers.

METHOD OF COMPUTING GRADE-POINT AVERAGE

The student is responsible for each registration in a course. The grade-point average is computed on all work attempted, including work attempted at the University and at other institutions of collegiate grade.

To be eligible for recommendation for the degrees of Bachelor of Science in Secondary Education and Bachelor of Science in Elementary Education, a candidate must:

1. Comply with the general regulations of the University concerning entrance, advanced standing, classification, examination, marks, grade points, etc.
2. Satisfy the following requirements:
   a. Complete the required courses and the minimum number of hours of approved elective courses in Education.
   b. Select and pursue two teaching fields for the B.S. Degree in Secondary Education and the B.S. Degree in Elementary Education except where otherwise prescribed in specific teaching fields.

c. Adhere to the patterns prescribed in completing the teaching fields.
d. Present a minimum of 128 hours of approved college credit, with a general average of "C" as described under General Requirements for Certification. The candidate must have completed 26 hours after enrolling in the College of Education.
e. Be at least 18 years of age, of good moral character, interested in educational work, and mentally, physically, and otherwise qualified to perform the duties of a teacher.

Fulfillment of the requirements for graduation from the College of Education qualifies a candidate to apply for recommendation for a West Virginia Professional Certificate.

The College may require appropriate standardized tests of its graduates.

General Requirements For Professional (First Class) Certificates

In order to teach in the public schools of West Virginia, one must hold a certificate issued by the West Virginia State Department of Education. Before any West Virginia University applicant is eligible to receive a Professional Certificate he must have: (1) met the minimum State requirements, (2) met the University degree requirements, and (3) been recommended by the Dean of the College of Education as herein prescribed.

The College will inform each of its students who is a prospective teacher, and any other prospective teacher, upon request, of the requirements for certification, and assist him in preparing a program of study to meet these requirements. It is the obligation of the student who desires such counsel to arrange a conference some time before the end of the sophomore year.

A candidate for certification is required to achieve a grade-point average of 2.0 ("C") or better as follows: (1) on the total of college credits earned; (2) on the hours earned in Education; (3) in student teaching; and (4) in each of the teaching fields required for all teaching certificates.

The Dean of the College recommends candidates for Professional Certificates only after the completion of work for the baccalaureate degree. To be eligible for recommendation by the University for any West Virginia Professional Certificate, the applicant must have done student teaching under the supervision of the College.

At least 45 semester hours of upper-division work, West Virginia University standards, are required for all teaching certificates. The qualifications herein prescribed are minimum, not optimum or maximum, and must be met by all candidates.

GENERAL SUBJECT-MATTER AND EDUCATION REQUIREMENTS FOR PROFESSIONAL CERTIFICATES VALID FOR FIVE YEARS

Required Courses	*Professional Grades 1-9*	*Professional Grades 7-12*	*Professional Grades 1-12 Music & Speech*
English and Speech	*Hr.*	*Hr.*	*Hr.*
Written and Spoken English English 1, 2	6	6	6
Advanced Written and Spoken English English 18	3	3	3
Study and Appreciation of Literature			
English 5 or 6 (American)	3)	3)	3)
Or	*or*	*or*	*or*
English 3 or 4 (English)	3)	3)	3)
Backgrounds of (Child) Literature Lib. Sci. 203	3		
Speech			
Speech 3 (Voice and Diction) *or*	3		
Speech 11 (Public Speaking)	3		
Minimum Requirement	18	12	12

Required Courses	*Professional Grades 1-9*	*Professional Grades 7-12*	*Professional Grades 1-12 Music & Speech*
Social Science			
Development of Social Institutions			
Hist. 1, 2	6)	6)	6)
Or	*or*	*or*	*or*
Humanities 1, 2	8)	8)	8)
Fundamental Social Problems			
Soc. Sci. 1, 2	8	8	8
American History: Hist. 52, 53	6		
West Virginia History: Hist. 150	3		
Geography			
Geog. 7 (Introduction) *or* Geog. 109 (Econ.)	3		
Minimum Requirement	26-28	14-16	14-16
Science and Mathematics	*Hr.*	*Hr.*	*Hr.*
Biol. 1, 2		8)	8)
Or		*or*	*or*
Phys. Sci. 1, 2		8)	8)
Biol. 1, 2 *And*			
Phys. Sci. 1			
Or			
Phys. Sci. 1, 2 *And*			
Biol. 1	12		
Conservation			
Forestry 140	3		
Mathematics for Teachers			
Math. 6	3		
Minimum Requirement	18	8	8
Music			
Music in Human Relations			
Music 10	3	3	3
Music as an Art and Science			
Music 11	2		
Music Materials and Procedures			
Music 12	2		
Minimum Requirement	7	3	3
Art			
Art Appreciation			
Art 30	3	3	3
Creative Expression in the Fine Arts: Art 1	2		
Creative Expression in the Applied Arts: Art 2	2		
Minimum Requirement	7	3	3

Physical Well-Being			
Orientation in Physical Education			
For Men, Phys. Ed. 1, 2	0	2	2
For Men, Phys. Ed. 1, 2, 43	4	0	0
For Women, Phys. Ed. 3; 3 hr. from 4 to 25, 101, 102	0	4	4
For Women, Phys. Ed. 41, 42, 43	4	0	0
Health Ed. 101 *or* 102	2	2	2
Minimum Requirement	6	4-6	4-6

(Even if the Physical Education requirement for graduation from the University has been waived because of a special permit from the University Health Service, 2 semester hours in Physical Education are required of an applicant for a Professional Certificate, Grades 7-12; or 4 semester hours of Physical Education are required of an applicant for a Professional Certificate, Grades 1-9, or for a Professional Certificate, Grades 1-12).

Professional Education	*Professional Grades 1-9*	*Professional Grades 7-12*	*Professional Music Grades 1-12*	*Professional Speech and Hearing Therapy Grades 1-12*
	Hr.	*Hr.*	*Hr.*	*Hr.*
Orientation and Selection, Ed. 100	1	1	1	1
Human Growth and Development, Ed. 105, 106	6	6	6	6
Stud. Teaching, Sec. Sch., Ed. 124		6		
Stud. Teaching, Sec. Sch., Music, Ed. 125			4	
Prin. of Teaching, Sec. Sch., Ed. 120		4	4	
Mat. and Methods, Sec. Sch., Ed. 150-170		2	2	
Approved Electives in Sec. Ed.		2		
Stud. Teaching, El. Sch. Music, Ed. 115			3	
Mat. and Meth. Elem. Sch. Music, Ed. 130			2	
Mat. and Meth. in Public School Speech and Hearing Therapy, Grades 1-12, Ed. 127				4
Clinical Practice in Pub. School and Hearing Therapy, Ed. 128				6
Psych. and Management of the Elem. School, Ed. 141	3			3
Language Arts in the Elem. School, Ed. 142	3			
Mathematics in the Elem. School, Ed. 143	2			
Social Studies in the Elem. School, Ed. 144	2			
Science in the Elem. School, Ed. 145	2			
Student Teaching in the Elem. School, Ed. 146	6			
Minimum Requirements	25	21	22	20

NOTE: To be recommended by the University for any Professional Certificate, students shall complete a minimum of 8 semester hours in student teaching and methods at the University.

PROGRAMS FOR PROFESSIONAL CERTIFICATES, GRADES 1-9

Requirements for the Degree of Bachelor of Science in Elementary Education and for Recommendation for the Professional Certificate, Grades 1-9

Foundation: Lower-Division Work

In preparation for admission to the College of Education and the work of preparing for teaching in elementary schools, students will register the freshman and sophomore years in the College of Arts and Sciences and pursue the program of general education that the State Board of Education has prescribed for all students who seek recommendation for teaching certificates. This program of prescribed work is included in the "Curriculum for Professional Certificates, Grades 1-9."

Training: Upper-Division Work

Admission: For admission to the prescribed courses in Elementary Education (Ed. 141, 142, 143, 144, 145 and 146), including the noncredit Conference course, students shall register the final two years in the College of Education.†

Subject Matter: In lower-division work students should pursue the lower-division required courses, so that the greatest possible number of hours taken during the junior and senior years may be courses giving upper-class credit.

Graduation and Certification Requirements: To become eligible for recommendation for the degree of Bachelor of Science in Education and for the Professional Certificate, Grades 1-9, the student must complete the required curriculum and plan of work with a grade-point average of 2.0 ("C") or better, as follows: (1) on the total of college credits earned; (2) on the hours earned in Education; (3) in each of two teaching fields; and (4) in student teaching; and have been enrolled in the College of Education for at least 26 semester hours of work, including a minimum of 8 semester hours in student teaching and methods taken at the University.

Program for Undergraduate Elementary Education, Grades 1-9

Required Courses

		Hr.
	Sophomore Year	
Ed. 100.	Orientation and Selection	1
	Junior Year	
Ed. 105.	Human Growth and Development—Introduction	3
Ed. 106.	Human Growth and Development—Principles of Learning	3
Ed. 141.	Psychology and Management of the Elementary School	3
Ed. 142.	Language Arts in the Elementary School	3
Ed. 143.	Arithmetic in the Elementary School	2
	Senior Year	
Ed. 144.	Social Studies in the Elementary School	2
Ed. 145.	Science in the Elementary School	2
Ed. 146.	Student Teaching in the Elementary School	6
or		
Ed. 223.*	Clinical Experience in Elementary Education	3
Ed. Elective		0-3
		25

†See footnote, page 36.

*Students who have had three or more years of teaching experience in the elementary school may, upon recommendation of the Chairman of Undergraduate Elementary Education and approved by the Dean of the College of Education, take 3 semester hours of clinical experience in elementary education.

Requirements for Provisional Professional Certificate, Grades 1-9

Provisional Professional Certificates, Grades 1-9 (valid for three years for teaching in the elementary school) will be issued to applicants who:

1. Have an undergraduate degree and the recommendation of the Dean.
2. Are within 18 hours of meeting the requirements for a Professional Certificate, Grades 1-9.
3. Have completed 15 hours of Elementary Education (including a course in student teaching), selected from courses applicable for a Professional Certificate, Grades 1-9.
4. Have completed a part of the required courses in English, social studies, science and mathematics, music, art, and physical education.

Endorsement to Teach in Junior High School

The Professional Certificate, Grades 1-9, *must be endorsed* with at least *two* fields for teaching in Grades 7 through 9 (junior high school). A minimum of 18 hours (15 hours in mathematics) of work prescribed for a high school teaching field is required in each field. Below are listed the general categories of work for each field. For each teaching field suggested University courses to implement the State recommendations for a field to teach in Grades 7 through 9 are listed. The listed courses have been suggested by the departments concerned and approved by the College. However, these suggestions should be regarded as guides rather than limitations. It should be borne in mind, however, that any deviation from the recommended courses must still conform to the listed general categories.

Art—(Drawing, design, and painting)	*Hr.*
Art 105 or 106, History	3
Art 111, Drawing	3
Art 113, Painting	3
Art 121-122, Design	6
Art 126, Modeling	2
Art 220, Theory	2
or	
Art 225, Theory	3

Commerce—(Typewriting, shorthand, and accounting)

English—(Composition and Literature, English and American)

Required:	
English 3, Survey: English Literature*	3
English 4, Survey: English Literature*	3
English 5, American Literature*	3
English 6, American Literature*	3
Remaining hours from following list:	
English 138, English Literature, 1660-1744	3
English 139, English Literature, 1744-1798	3
English 140, Elizabethan Poetry and Prose	3
English 141, Literature of the Seventeenth Century	3
English 142, Shakespeare	3
English 166, American Fiction	3
English 173, Poetry	2
English 175, The Short Story	2
English 249, The Romantic Movement	3
English 250, American Romanticism	3
English 258, Victorian Prose	3
English 270, American Poetry	3

Foreign Language—(Composition, grammar, and literature)

*For certification with a field in English for Grades 1-9, six semester hours of literature, English 3 or 4 and 5 or 6, are required. The only substitutions which may be approved are English 163 and 164 for English 3 and 4.

General Science—(General biological science and general physical science, chemistry or physics)

	Hr.
Phys. Sci. 1, Introductory General Course	4
Phys. Sci. 2, Introductory General Course	4
Biol. Sci. 1, Introductory General Course	4
Biol. Sci. 2, Introductory General Course	4
Astronomy 106, Descriptive Astronomy	3

Home Economics—(Foods and nutrition, textiles and clothing)

FN 1, Elementary Nutrition	4
TC 2, Principles of Clothing Construction	3
FN 15, Food Selection and Preparation *or* FN 135, Food and People	3
TC 17, Textiles	3
CDFR 106, Child Development	3
CDFR 114, Family Relations	3
HMFE 230, Home Management, Principles and Application	3

Industrial Arts—(Mechanical drawing, general shop, and organization of industrial arts)

The Department of Industrial Arts makes no recommendations for a minor teaching field including fewer hours than the 28 hours required for "General Shop Endorsement" in Industrial Arts.

Mathematics—(Basic theory and skills)

Math. 3, College Algebra	3
Math. 4, Plane Trigonometry	3
Math. 15, Calculus I	4
Math. 116, Calculus II	4
Math. 117, Calculus III	4

(NOTE: Solid Geometry, ½ unit (or 1 unit of integrated geometry) is required. Advanced placement examinations may permit a student who has 1½ units or more of high school algebra to omit Math. 3, and a student who has ½ unit of trigonometry in high school to omit Math. 4 with appropriate credit for omitted courses.)

Music—(Theory and applied music)

Music 1, Theory	4
Music 100, 102, 103, 105, Band, Orchestra, Chorus	2
Music 140, History of Music	3
Music 150; 80-86, Applied Music: Voice, Piano, and Instruments	4
Music 182, Music Education (secondary)	3
Music 183, Conducting	2

Physical Education—(Health problems for the school child and organization and administration of health and physical education)

Required Courses	*Men*	*Women*
Phys. Ed. 31-32, Team Sports	0	2
Phys. Ed. 51, Fundamentals of Baseball and Gymnastics	2	0
Phys. Ed. 53, Junior & Senior High School Activities and Games	2	0
Phys. Ed. 61, Stunts, Tumbling, and Trampoline	0	1
Phys. Ed. 71, Orientation in Physical Education	2	2
Phys. Ed. 132, Folk Dancing	1	1
Phys. Ed. 177, History and Principles of Physical Education	3	3
Phys. Ed. 278, Administration of Physical Education	3	3
Health Ed. 101 or 102, The School Health Program	2	2
Safety Ed. 127, Accident Prevention and First Aid	2	2

Suggested Electives	*Men*	*Women*
Phys. Ed. 5, Ballroom Dance	1	1
Phys. Ed. 14, Elementary Swimming and Diving	0	1
Phys. Ed. 35, Modern Dance Technique	0	1
Phys. Ed. 52, Advanced Swimming, Life Saving, & Water Safety	1	0
Phys. Ed. 54, Individual and Dual Sports	2	2
Rec. 4, Recreation and the School	3	3

Social Studies—(American history and world geography)

Speech—(Fundamentals of speech, voice and diction, play directing, and speech correction)

Speech 3, Voice and Diction	3
Speech 6, Acting	3
Speech 11, Public Speaking	3
Speech 29, Oral Interpretation	3
Speech 162, Play Directing	3
Speech 250, Speech Correction	3

Teacher-Librarian—(Cataloguing and classification, book selection, and reference and bibliography)

Lib. Sci. 101, Reference and Bibliography	3
Lib. Sci. 203, Library Materials for Children	3
Lib. Sci. 205, Selection of Books and Related Materials for Young People	3
Lib. Sci. 207, School Library Organization and Administration	3
Lib. Sci. 222, Field Practice	3
Lib. Sci. 223, Cataloguing and Classification	3
Lib. Sci. 235, Library in the Elementary School	2

Professional Certificates, Grades 7-12, may also be endorsed to teach in junior high school upon completion of any of the fields listed above, provided the applicant has a regular first and second teaching field listed on his certificate. Certificates endorsed for teaching in junior high school, as described above, are also valid for teaching a minor assignment in Grades 10 through 12, with the exception that General Science is approved for Grades 7 through 9 only.

Program for Professional Certificate, Grades 7-12

EDUCATION: COURSES REQUIRED AND ELECTIVES APPROVED FOR THE PROFESSIONAL CERTIFICATE, GRADES 7-12

I. *Required Courses* — *Hr.*

Sophomore or Junior Year

Ed. 100. Orientation and Selection	1
Ed. 105. Human Growth and Development—Introduction	3
Ed. 106. Human Growth and Development—Principles of Learning	3

Senior Year

Ed. 124. Student Teaching	4-6) to be
Ed. 157-170. Materials and Methods	2) taken as
Ed. 120. Principles of Teaching in Secondary Schools	4) a block

II. *Approved Electives in Secondary Education—Junior or Senior Year* 2-3

Selected from Education:
Ed. 109, 150-170, 221, 251, 259, 262, 270, 271, 275, 276, 277, 284, 285.

(A minimum of 21 semester hours of approved Education courses is required for a Professional Certificate, Grades 7-12, and a maximum of 24 semester hours will be accepted.)

High-School Teaching Fields

Students desiring to qualify for a Professional Certificate, Grades 7-12, must complete the requirements in two teaching fields.

AGRICULTURE—Vocational Agriculture	*First Teaching Field*
Minimum Requirements	50 hr.
I. *Required Courses*	
1. Farm Crops, Soils, and Horticulture Agr. 52, Agron. 2	7
2. Animal Industry and Veterinary Science (Animal, Dairy and Poultry Science) Animal Industry and Veterinary Science 51, Animal Nutrition 101	7
3. Agricultural Economics—Ag. Econ. 103, Ag. Econ. 104 and other two and three hour courses to be approved by adviser	8-9
4. Agricultural Engineering and Agricultural Mechanics Ag. Eng'g. 10, Ag. Mech. 152, Ag. Mech. 253, or other three hour courses to be approved by adviser	9
5. Plant or Animal Science An. Path. 102, or Pl. Path. 201	3-4
6. Agricultural Education 118	2
7. Orientation to Agriculture—Agr. 11 and 12	2
II. *Electives in the above fields and in Agricultural Education, Entomology, and Genetics*	10-12

Ag. Econ. 105, 110, 131, 200, 230
Ag. Educ. 134, 138
Ag. Mech. 200, 252, 254, 259, 270, 275, I.E. 7
Agronomy 210, 212, 216, 251, 254
An. Physiol. 100, 225
An. Prod. 103, 108, 109, 110, 123, 138, 141, 142, 143, 201, 222
Food Sci. 12, 106, 107, 124, 167
Vet. Sci. 206
Hort. 115, 116, 117, 141, 206, 208, 212, 229, 232, 234
Entomology 202, 203
Genetics 111, 221

NOTE: Teachers of Vocational Agriculture must be approved by the State Supervisor of Vocational Agriculture and the Vocational Agriculture Teacher Trainer.

ART	*First Teaching Field*	*Other Teaching Field*
Minimum Requirements	32 hr.	26 hr.
I. *Required Courses*		
1. Freehand Drawing: Art 11 *or* 111 *or* 115, 12 *or* 112	6	6
2. Design: Art 121, 122	6	6
3. Painting: Art 113, 114	6	6
4. Modeling: Art 126	2	2
5. History and Appreciation of Art:		
Art 30, 105, 106	9	—
Art 30; 105 *or* 106	—	6
II. *Elective Courses: Art (unrestricted)*	3-4	

COMMERCE	*First Teaching Field*	*Other Teaching Field*
Minimum Requirements	32 hr.	27 hr.
I. *Required Courses*		
1. Business Mathematics (Math. 8)	3	3
2. Accounting: Accounting 1, 2	6	6
3. Marketing or Retailing: Marketing 111 or 115	3	3
4. Typewriting: Secretarial Studies 61, 62	4	4
5. Shorthand: Secretarial Studies 125, 126	8	8
6. Secretarial Training and Office Practice: Secretarial Studies 131	3	3
II. *Electives (unrestricted in the field)*	5	

NOTE: Economics 51 and 52 are prerequisite for Marketing 111 and 115 and may be used to meet elective requirements in the first teaching field.

ENGLISH	*First Teaching Field*	*Other Teaching Field*
Minimum Requirements	35-36 hr.	24 hr.
I. *Required courses (exclusive of 6 hr. of Freshman Composition)*		
1. Written or Spoken English English 18 (3 hr.) and Speech 3, 6, 11, *or* 29 (3 hr.)	6	6
2. Literature English 3 and 4, *or* 163 and 164 (6 hr.) Survey: English Literature English 5, 6 (6 hr.) Survey: American Literature	12	12
II. *Electives*	17-18	6
1. Literature (Upper-division period or type courses: include not more than 3 hr. in any one type or period. Suggested choices: 142, 160, 161, 166, 173, 175, 138 or 139, 140, 141; one or more "200" courses in authors or periods of special interest to the student.)	12	6
2. Two of the following Journ. 215 (2 hr.) Lib. Sci. 1 or 101 (3 hr.) Speech 162 (3 hr.)	5-6	

FOREIGN LANGUAGES

A. French	*First Teaching Field*	*Other Teaching Field*
Minimum Requirements	30 hr.	24 hr.
I. *Required Courses*		
1. Elementary French: French 1, 2	6	6
2. Intermediate French: French 3, 4	6	6
3. Advanced Grammar, Conversation, and Pronunciation: French 109, 231	6	6
4. Elementary Conversation: French 103, 104	6	6

II. *Elective Courses*: French 115, 116, 118 6

NOTE: Two semester hours may be deducted in the first teaching field for each high school unit with a maximum of six (6) hours deduction, unless the equivalent courses are taken for University credit.

B. German	*First Teaching Field*	*Other Teaching Field*
Minimum Requirements	30 hr.	24 hr.
I. *Required Courses*		
1. Elementary German: German 1, 2	6	6
2. Intermediate German: German 3, 4 ...	6	6
3. Spoken German: German 103, 104	6	6
4. Survey of German Literature: German 245*	3	3
5. History of German Language: Linguistics 251*	3	3
II. *Elective Courses*: (unrestricted)	6	

NOTE: Two semester hours may be deducted in the first teaching field for each high school unit with a maximum of six (6) hours deduction, unless the equivalent courses are taken for University credit.

*With the approval of the Chairman of the Department of Foreign Languages, courses on the 200 level may be substituted for German 245 and 251.

C. Latin	*First Teaching Field*	*Other Teaching Field*
Minimum Requirements	30 hr.	24 hr.
I. *Required Courses*		
1. Grammar and Composition: Latin 1, 2 .	6	4
2. Cicero's Orations: Latin 4 or 203	3	3
3. Virgil's Aeneid: Latin 235	3	3
II. *Elective Courses*: Latin or Classics (unrestricted)	18	14

NOTE: Two semester hours may be deducted in the first teaching field for each high school unit with a maximum of six (6) hours deduction, unless the equivalent courses are taken for University credit.

D. Spanish	*First Teaching Field*	*Other Teaching Field*
Minimum Requirements	30 hr.	24 hr.
I. *Required Courses*		
1. Elementary Spanish: Spanish 1, 2	6	6
2. Intermediate Spanish: Spanish 3, 4	6	6
3. Elementary Conversation: Spanish 103, 104	6	6
4. Advanced Grammar and Conversation: Spanish 109, 110	6	3 (109 only)
5. Survey of Literature: Spanish 211, 212, *or* Golden Age: Spanish 221, 222	6	3

NOTE: Two semester hours may be deducted in the first teaching field for each high school unit with a maximum of six (6) hours deduction, unless the equivalent courses are taken for University credit.

HOME ECONOMICS—General Certificate	*First Teaching Field*	*Other Teaching Field*
Minimum Requirements	37 hr.	25 hr.
1. *Required Courses*		
1. Foods and Nutrition: FN 1, 15, 115, 101, 121, 135	8	6
2. Textiles and Clothing: TC 2 and 17; Electives	8	6
3. Housing and Design: HD 3, 23, 123	8	4
4. Home Management and Family Economics: HMFE 130, 250 (210, 230 required)	8	4
5. Child Development and Family Relations: CDFR 106, 114 (required), 126	5	5

HOME ECONOMICS—Vocational Certificate

Minimum Requirements	40
1. Foods and Nutrition: FN 1, 101, 121, 15, 115, 135, 215	8
2. Textiles and Clothing: TC 2, 102, 212, 222, 17, 117, 217, 232	8
3. Housing and Design: HD 3, 23, 123, 133	8
4. Home Management and Family Economics: HMFE 120, 130, 210, 230, 250, (210 and 230 required)	8
5. Child Development and Family Relations: CDFR 106, 114, 126, 206, 224, 264, 266 (106 and 114 required)	6
6. Electives	2

THE INDUSTRIAL ARTS

INDUSTRIAL ARTS (comprehensive) 52 hr.

Required Areas

General Shop Endorsement	28
Two Unit Shops	24

A student electing a comprehensive field in Industrial Arts shall complete in addition to the General Shop endorsement 24 semester hours within two of the four areas: power mechanics, electricity, graphics, manufacturing and fabrication. The 24 additional hours shall be divided evenly between the two areas selected.

GENERAL SHOP 28 hr.

Required Areas

General Shop—Ed. 107 (IA), Ed. 108 (IA)	6
Woodworking—Ed. 102 (IA), Ed. 103 (IA)	4
Metals—Ed. 104 (IA), Ed. 112 (IA)	4
Industrial Crafts—Ed. 121 (IA)	2
Drafting—Ed. 173 (IA), Ed. 174 (IA), ME 20, ME 26	4
Electricity and Electronics—Ed. 131 (IA), Ed. 132 (IA)	4
Graphics—Ed. 180 (IA)	2
Industrial Arts Laboratory Maintenance—Ed. 110 (IA)	2

Professional Education: Ed. 194, Ed. 181 4

*UNIT SHOP ENDORSEMENT**

A student qualifying for the General Shop Endorsement who does not desire a comprehensive field in Industrial Arts may qualify to teach a unit shop by completing six additional hours in one of the following units of specialization.

Suggested Areas	Hr.
Metals—Ed. 240 (IA), IE 7, IE 11, IE 15, IE 100	6
Wood—Ed. 242 (IA), Ed. 204 (IA)	6
Crafts—Ed. 243 (IA), Ed. 244 (IA), Art 126	6
Graphics—Ed. 246 (IA), Physics 257 or 116	6
Technical Drawing—Ed. 249 (IA), Ed. 238 (IA), Art 123	6

*A unit shop endorsement cannot be considered as a second single subject specialization.

MATHEMATICS	*First Teaching Field*	*Other Teaching Field*
Minimum Requirements	24 hr.	22 hr.
I. *Required Courses*		
Math. 3, College Algebra	3	3
Math. 4, Plane Trigonometry	3	3
Math. 15, Calculus I	4	4
Math. 116, Calculus II	4	4
Math. 117, Calculus III	4	4
II. *Electives*	6	4

For a first teaching field, six hours of electives are needed, numbered 200 or above; for the other teaching field, four hours of electives are needed, numbered 200 or above. Courses from both the fields of algebra and geometry must be included.

NOTE: Solid Geometry, ½ unit (or 1 unit of integrated geometry) is required. Advanced placement examinations may permit a student who has 1½ units or more of high school algebra to omit Math. 3, and a student who has ½ unit of trigonometry in high school to omit Math. 4 with appropriate credit for omitted courses.

MUSIC	*First Teaching Field*	*Other Teaching Field*
Minimum Requirements	50 hr.	24 hr.
I. *Required Courses*		
1. Theory: Mus. 1, 2, 3, 4, 117, 118, 119, or 120	16	6
2. History or Appreciation of Music: selected from Music 140, 141, 280, 281	6	3
3.* Applied Music: Piano, Voice, and at least two Band and Orchestral Instruments, selected from Music 150, 80, 81, 82, 83, 84, 85, 86	16	8
4. Music Education and Organizations: First Field: Music 181 and Music 182 (both required); Music 183 and Music 184 (both required); two hours selected from Music 100, 102, 103, 105	12	
Second Field: Music 181 or Music 182; Music 183		5
Two hours selected from: Music 100, 102, 103, 105		2

NOTE: Students applying for the Professional Certificate, Grades 1-12, are required to complete 50 hours in Music.

*Education majors with a first teaching field in Music must complete level 7 in the Applied major; Education majors with a second teaching field in Music must complete level 5 in the Applied major. (See Division of Music section for explanation of levels.)

PHYSICAL EDUCATION	*First Teaching Field*	*Other Teaching Field*
Minimum Requirements	34 hr.	28-29 hr.
I. *Required Courses*		
1. Anatomy and Kinesiology: Phys. Ed. 175	5	5
2. Physiology: Zool. 271	4	
3. Principles of Organization and Administration of Physical Education: Phys. Ed. 278	3	3
4. Health Education: Health Ed. 2, 102	4	4
5. Physical Inspection and Correction of Remedial Defects: Phys. Ed. 176	2	2
6. Theory and Practice in Physical Education	16	14

	Men	*Women*	*Men*	*Women*
a. Orientation: Phys. Ed. 71	2	2	2	2
b. Team Sports: Phys. Ed. 51, 55, 56	5	0	5	0
Team Sports: Phys. Ed. 31, 32, 63	0	3	0	3
c. Recreational Activities:				
Phys. Ed. 52, 54	3	0	3	0
Phys. Ed. 33, 54, 61	0	4	0	3
d. School and Community Relations:				
Phys. Ed. 121; Recreation 4; Phys. Ed. 53	4	0	4	0
Safety Education 127; Recreation 4	0	3	0	4
e. Rhythmic Activities: Phys. Ed. 5, 132	2	0	1	0
Rhythmic Activities: Phys. Ed. 5, 35, 36, 132, 171	0	4	0	2

SCIENCES

A. *BIOLOGICAL SCIENCE*	*First Teaching Field*	*Other Teaching Field*
Minimum Requirements	32 hr.	24 hr.
I. *Required Courses*		
1. Biology 1, 2	8	8
2. Chemistry 1, 2 *or* Phys. Sci. 1, 2	8	6
II. *Electives (from below)*	16	10

Electives will be chosen from the following, and must include a minimum of 5 hours in plant life and 5 hours in animal life:

Bact. 141
Biol. 203, 204, 205, 206, 207, 209, 210, 211, 221
Bot. 161, 171, 204, 218, 224, 227, 263, 266
Entomol. 200, 202
Forestry 140, 141, 144, 145, 183
Genet. 111, 112, or 221
Plant Path. 201, 203
Zool. 210, 222, 223, 265, 271

NOTE: A candidate for a teaching certificate who elects Biological Science as a first teaching field may not elect Biological and General Science as a second teaching field.

B. *BIOLOGICAL AND GENERAL SCIENCE*	*First Teaching Field*	*Other Teaching Field*
Minimum Requirements	42 hr.	35 hr.
I. *Required Courses*		
1. Biol. 1, 2	8	8
2. Chem. 1, 2	8	8
3. Physics 1, 2 or 111, 102	8	8
4. Geol. 1, 2	3-4	3-4
II. *Electives*	14-15	8

1. Electives selected from those listed for teaching field in Biological Science (above)—a minimum of 8 hours for either teaching field. Must include a minimum of 4 hours in plant life and 4 hours in animal life. (Minimum of 16 hr. in Biological Science is required).
2. Chem. 105, 115, 131, or 163
3. Physics 113, 114, 116, 117, 118
4. Geol. 3, 170

NOTE: A candidate for a teaching certificate who elects Biological and General Science as a first teaching field may not elect Biological Science or Physical-General Science as a second teaching field.

C. *PHYSICAL SCIENCE*	*First Teaching Field*	*Other Teaching Field*
Minimum Requirements	36 hr.	24 hr.
I. *Required Courses*		
1. Chemistry: Chem. 1, 2	8	8
2. Chemistry: Chem. 105, 115, 131	3 or 4	3 or 4
3. Physics: Physics 1, 2 or 11, 102	8	8
II. *Electives—(at least 4 hours must be in Chemistry and/or Physics)*	16	4

1. Chemistry
2. Physics
3. Geology (not Geography)
4. Astronomy (Astron. 106, 3 hr.)

NOTE: A candidate for a teaching certificate who elects Physical Science as a first teaching field may not elect Physical and General Science as a second teaching field. Phys. Sci. 1, 2 not accepted.

D. *PHYSICAL AND GENERAL SCIENCE*	*First Teaching Field*	*Other Teaching Field*
Minimum Requirements	42 hr.	34 hr.
I. *Required Courses*		
1. Chemistry: Chem. 1, 2	8	8
2. Chemistry: Chem. 105, 115, 131	3 or 4	3 or 4
3. Physics: Physics 1, 2, or 11, 102	8	8
4. Biology: Biol. 1, 2	8	8
5. Geology: Geol. 1, 2	4	4
II. *Electives—(at least 4 hours must be in Chemistry and/or Physics)*	10	2

1. Chemistry
2. Physics
3. Geology (not Geography)
4. Biology
5. Astronomy (Astron. 106, 3 hr.)

NOTE: A candidate for a teaching certificate who elects Physical and General Science as a first teaching field may not elect Physical Science or Biological-General Science as a second teaching field.

E. *GENERAL SCIENCE*—(Although General Science is not recognized as a high school teaching field, it is recognized as a minor teaching field. See page 279).

SOCIAL STUDIES	*First Teaching Field*	*Other Teaching Field*
Minimum Requirements	30 hr.	24 hr.
I. *Required Courses (exclusive of general Social Studies requirements)*		
1. History: Hist. 52, 53, 150 *or* 250	9	9
2. Political Science: Pol. Sci. 2, 120, 221	3	3
3. Economics: Econ. 51 or 52*	3	3
4. Sociology: Sociol. 1, 104, or any 200 course except 202 and 246	3	3
5. Geography: Geog. 7 *or* 109	3	3
II. *Electives (upper-division courses from the five departments listed above)*	9	3

*Only 3 hours of economics are required for certificates, but Econ. 51 and 52 are prerequisite to all upper-division courses in economics.

SPEECH	*First Teaching Field*	*Other Teaching Field*
Minimum Requirements	36 hr.	24 hr.
I. *Required Courses*		
1. Voice and Diction: Speech 3	3	3
2. Acting: Drama 75	3	3
3. Public Speaking: Speech 11 *or* 34	3	3
4. Oral Interpretation: Drama 50	3	3
5. Group Discussion: Speech 120	3	0
6. Argumentation and Debate: Speech 121	3	3
7. Introduction to Broadcasting: Speech 140	3	0
8. Stage Craft: Drama 100	3	3
9. Play Directing: Drama 180	3	3
10. Speech Correction: Speech 250	3	3
II. *Electives:* Speech (unrestricted)	6	0

TEACHER-LIBRARIAN	*First Teaching Field*	*Other Teaching Field*
Minimum Requirements	27 hr.	24 hr.
I. *Required Courses*		
1. Using Books and Libraries: Lib. Sci. 1	3	3
2. Reference and Bibliography: Lib. Sci. 101	3	3
3. Children's Literature and Story Telling: Lib. Sci. 203	3	3
4. Book Selection for Adults: Lib. Sci. 225	3	
5. Book Selection for Adolescents: Lib. Sci. 205	3	3
6. Library Resources for Children and Young People: Lib. Sci. 230	3	3
7. Administration of the School Library: Lib. Sci. 207	3	3
8. Library Practice: Lib. Sci. 222	3	3
9. Cataloguing and Classification: Lib. Sci. 223	3	3

Speech and Hearing Therapy, Professional Certificate, Grades 1-12

	Hr.
Minimum Requirements*	42-45
I. *Required Courses*	
1. Introduction to Speech Correction: Speech 50 or 150, 156	6
2. Advanced Speech Correction: Speech 251	3
3. Anatomy and Physiology of Speech and Hearing Mechanisms: Speech 154	3
4. Phonetics: Speech 153	3
5. Stuttering and Other Organic Disorders: Speech 252, 253	6
6. Audiology: Speech 157, 158	6
7. Clinical Practice: Speech 277, 278†	6
II. *Electives in Speech, Education, and Psychology*	9-12

*The full sequence of courses required for certification in audiology is open only to graduate students. The courses as listed, open to undergraduates, fulfill the state certification requirements in speech correction.

†These courses meet the requirements of Ed. 128. A minimum of 200 clock hours of supervised direct experience with individuals with an appropriate variety of disorders of oral communication must be obtained to fulfill the credit requirements for these courses.

REQUIREMENTS FOR PROVISIONAL PROFESSIONAL CERTIFICATES, GRADES 7-12

Provisional Professional Certificates, Grades 7-12 (valid for 3 years for teaching in junior and/or senior high school), will be issued to applicants who meet the following requirements:

1. Graduation and recommendation by the Dean of the College of Education.
2. General Requirements: Fifteen hours of secondary education, including a course in student teaching, to be selected from the courses applicable for a first-class certificate. Three-fourths of the teaching subject-matter requirements of each division of each teaching field as designed for the Professional Certificate, Grade 7-12.

Courses of Instruction*

No courses in Education except Ed. 100, 102 (IA), 103 (IA), 104 (IA), 105, 106, 107 (IA), 108 (IA), and 112 (IA) are open to sophomores. The following courses are required of teachers for recommendation for a Professional Certificate, Grades 7-12: Ed. 100, 105, 106, 120, 124, 150-170, and enough additional hours chosen from the following approved electives to meet the minimum requirements of 21 hours in Education: Ed. 109, 150-170 in a second teaching field, 221, 251, 259, 262, 270, 271, 275, 276, 277, 284, and 285. The following courses are required of teachers for recommendation for a Professional Certificate, Grades 1-9: Ed. 100, 105, 106, 141, 142, 143, 144, 145, and 146.

100. Orientation and Selection. I, II, S. 1 hr. Open to sophomores and above. Acquaints students with selective processes necessary for admission to the College of Education or the student teaching program and assists the teacher trainee in self evaluation through counseling and testing.

102. Hand Woodworking (IA). I. 2 hr. Design and construction of small projects suitable for secondary schools involving hand woodworking skills, tools, materials and processes. Open to lower-division students.

103. Machine Woodworking (IA). II. 2 hr. Development of skill in use of the common power woodworking machines. Open to lower-division students.

*Ed. 100 and Ed. 105 are prerequisite to all other courses in Education.

104. Cold Metals (IA). I. 2 hr. Layout, planning and construction in sheet metal and ornamental iron. Open to lower-division students.

105. Human Growth and Development—Introduction. I, II, S. 3 hr. Open to sophomores or above. Emphasis upon competencies in understanding and applying principles involved in the growth and development of children and youth.

106. Human Growth and Development—Principles of Learning. I, II, S. 3 hr. PR: Ed. 100, 105. Continuation of Ed. 105 with special attention to the principles of learning. Open to sophomores or above.

107. General Shop 1 (IA). I. 3 hr. Basic course in the practice and techniques involved in the areas of printing, bench-metal work, forging, foundry, and project planning. General shop organization emphasized.

108. General Shop 2 (IA). II. 3 hr. PR: Ed. 107 (IA). Continuation of Ed. 107 (IA). Emphasis on planning and project construction in electricity, metals, including welding (gas and arc), metal lathe turning, spinning, cold forming, and wood patternmaking.

109. History and Philosophy of the Secondary School. I, II. 2 hr. PR: Ed. 105, 106. Significant historical developments giving rise to the modern secondary school; the nature and function of the secondary school in an emerging new world order; influence on curriculum and instruction.

110. Maintenance and Construction of Industrial Arts Equipment (IA). I, II, S. 2 hr. PR: Ed. 102 (IA), 104 (IA), and consent. Study of school shop maintenance problems and their solution, including the construction of certain types of equipment.

112. Hot Metals (IA). II. 2 hr. Foundry practice, forging, gas and electric welding, construction of patterns and jigs. Open to lower-division students.

115. Student Teaching in Elementary-School Music. I, II. 3 hr. Observation and practice of teaching music to pupils in grades 1 through 6. Open to seniors who have completed 27 semester hours in music and 7 semester hours in Education with a grade-point average of 2.0 (C) in each and an overall grade-point average of 2.0 (C).†

120. Principles of Teaching in Secondary Schools. I, II, S. 4 hr. PR: Open only to those who qualify for the student teaching block.

121. Industrial Arts Crafts (IA). I. 2 hr. Construction activities suitable for secondary schools in such media as leather, plastics, and ceramics.

124. Student Teaching. I, II, S. 4-6 hr. PR: Ed. 100, 105, and 106. Open only to seniors and graduate students, regularly enrolled in the University, who meet the following requirements:

1. Completion of 75 per cent of the hours required in each of two teaching fields and completion of Ed. 100, 105 and 106, with a minimum overall grade-point average of 2.0 (C) and a minimum grade-point average of 2.0 (C) in each teaching field and in Education.†

2. An applicant for student teaching must submit positive evidence that he (or she) meets the requirements of physical condition and emotional stability necessary for the performance of the duties of a teacher. Such evidence must come from the University Health Service on a form used by the College of Education.

3. This course must be taken concurrently with Ed. 120 and the appropriate course of Ed. 150-170, unless exceptions have previously been made with the Director of Secondary Student Teaching. A period of 3 hours daily must be reserved for this and simultaneous courses for purposes of observation, discussion, and planning.

4. The second Monday in each calendar month, 7 to 9 p.m., must be reserved for teachers' meetings.

†See footnote, page 36.

5. Because two-thirds of the program of the University High School is in the forenoon, two-thirds of the applicants must schedule this course in the morning, reserving three hours daily without interruption. Admission is by application made early in the preceding semester to the Chairman of Undergraduate Secondary Education.

6. The adviser is responsible for furnishing a check of the student's record to determine eligibility.

7. Students with no teaching experience are expected to take this course during the academic year.

125. Student Teaching in Secondary-School Music. I, II. 4 hr. PR: Same requirements as Ed. 124 except in hours' credit needed.†

127. Materials and Methods in Public-School Speech and Hearing Therapy. I, II, S. 2-4 hr. PR: Consent. Includes experience in Grades 1 to 12. Three semester hours of this course may be earned by registering in Speech 276.

128. Clinical Practices in Public-School Speech and Hearing Therapy. I, II, S. 2-8 hr. PR: Consent. Includes experience in Grades 1 to 12. This course meets the requirements of Speech 277 and 278.

130. Materials and Methods in Elementary-School Music. I, II. 2 hr. (To be taken concurrently with Ed. 115.)

131. General Electricity 1 (IA). I. 2 hr. Study of basic electrical theory and its application in secondary-school teaching. Laboratory work involves the construction of electrical projects suitable for developing an understanding of electrical theory.

132. General Electricity 2 (IA). II. 2 hr. PR: Ed. 131 (IA). Continuation of Ed. 131 (IA) with an introduction to radio, involving crystals, transistors, and tubes.

141. Psychology and Management of the Elementary School. I, II, S. 3 hr. PR: Ed. 100 and 105 and enrollment in the College of Education. Introduction to elementary education including observation and participation in public schools. Principles of elementary education will be related to principles of learning in Education 106. Analysis of professional problems and procedures will be an integral part of the course. (To be taken concurrently with Ed. 106, 142, and 143.)

142. Language Arts in the Elementary School. I, II, S. 3 hr. PR: Ed. 100, 105, and enrollment in the elementary undergraduate program. This course covers instructional practices in all phases of the language arts. (To be taken concurrently with Ed. 106, 141, and 143.)

143. Arithmetic in the Elementary School. I, II, S. 2 hr. PR: Math. 6, Ed. 100 and 105, and enrollment in the elementary undergraduate program. Materials and methods with emphasis on the use of problem situations and "discovery" procedures for the development of mathematical ideas appropriate for the elementary school. (To be taken concurrently with Ed. 106, 141, and 142.)

144. Social Studies in the Elementary School. I, II, S. 2 hr. PR: Ed. 100, 105, 106, and enrollment in the elementary undergraduate program. Study of modern practices in the teaching of social studies. Emphasis on the principles and techniques underlying the community-oriented social processes, foreign culture and geography, and history are developed. (To be taken concurrently with Ed. 145 and 146.)

145. Science in the Elementary School. I, II, S. 2 hr. PR: Ed. 100, 105, 106, 141, 142, 143, and enrollment in the elementary undergraduate program. Study of modern practices in the teaching of science. (To be taken concurrently with Ed. 144 and 146.)

†See footnote, page 36.

146. Student Teaching in the Elementary School. I, II, S. 6 hr. PR: Ed. 100, 105, 106, 141, 142, 143 and enrollment in the elementary undergraduate program; a minimum grade-point average of "C" (1) in the non-Education courses and (2) in Education courses; and senior standing.† An applicant for student teaching must submit positive evidence that he or she meets the requirements of physical condition and emotional stability necessary for the performance of the duties of a teacher. Such evidence shall be provided by the University Health Service on a form used by the College of Education. Ed. 144 and 145 must be taken concurrently with student teaching. Admission is by application made early in the preceding semester to the Chairman of Undergraduate Elementary Education.

150-170. Materials and Methods of High-School Teaching. I, II, S. 2 hr. PR: Consent. Special methods in the various secondary-school teaching fields. For West Virginia certification these courses are an integral part of Ed. 124. May also be chosen as a 2-hour elective by students who are registered for student teaching in other fields.

The various sections of this course follow:

150. Science. 2 hr.
152. Physical Education. 2 hr.
153. Foreign Languages. 2 hr.
155. Library Science. 2 hr.
160. Agriculture. 3 hr.
161. English and Speech. 2 hr.
163. Home Economics. 2 hr.
164. Industrial Arts. 2 hr.
165. Mathematics. 2 hr.
167. Social Studies. 2 hr.
168. Art. 2 hr.
169. Music. 2 hr.
170. Commerce. 2 hr.

173. Technical Drawing 1 (IA). I. 2 hr. Fundamentals of mechanical drawing with emphasis on establishment of good techniques; nomenclature, conventions, and correct applications.

174. Technical Drawing 2 (IA). II. 2 hr. PR: Ed. 173 (IA). Continuation of Ed. 173 (IA). Detail and assembly drawing, sketching, tracings, and methods of duplication.

180. Industrial Arts Graphics (IA). I. 2 hr. Familiarization with methods of graphic reproduction including linoleum block, letterpress, silk screen, binding and offset press.

181. Materials and Methods of Industry. I. 2 hr. Introduction of related information in secondary school industrial arts laboratories relative to mass production, automation, and modern technology. Experiments with industrial products.

194. Organization of Industrial Arts. II. 2 hr. Comparative analysis of the objectives of general and industrial arts education; industrial arts content; study of the problems involved in organizing and administering industrial arts courses in unit and general shops.

202. Early Childhood Education. S. 2 hr. PR: Consent. Application of principles of psychology to early childhood education.

204. Advanced Woodworking, Construction, and Finishing (IA). II, S. 3 hr. PR: Ed. 102 (IA), 103 (IA), or equiv. Selection of advanced projects, analysis of construction, planning, and finishing, application of machine tools.

†See footnote, page 36.

221. Audio-Visual Resources for Instruction. I, II, S. 3 hr. PR: Ed. 105, 106. Survey of the many types of materials available for teaching. Multisensory techniques, sources of materials, and practical classroom utilization are considered. One hour laboratory period per week is arranged.

223. Student Teaching Clinical Experience in Elementary, Secondary, Reading, Mathematics, and Special Education. I, II, S. 2–4 hr. PR: Consent. Advanced course in student teaching, stressing clinical procedures in classroom learning problems, industrial arts therapy, and other related areas.

227. Materials and Methods in Public-School Speech and Hearing Therapy. I, II, S. 2–4 hr. PR: Consent.

238. Design in Industrial Education (IA). I, S. 3 hr. PR: Consent. Industrial education design; architectural drawing and model building. Emphasis on application of design components at the secondary school level.

240-250. These courses are designed to prepare versatile teachers of industrial arts and to meet State certification requirements. The abbreviated introduction to specific crafts through these courses is intended to provide broad rather than specialized experience and to prepare the teacher to teach the fundamentals of crafts rather than to attain vocational competence. Prospective teachers should elect, from these courses, those which will supplement their previous training in organizing and directing the industrial arts program.

240. Art Metal and Jewelry (IA). I, S. 3 hr. PR: Ed. 104 (IA) or equiv. Creative design and construction of art metal and jewelry involving the utilization of sheet, bar, and wire stock. Development of units suitable for the secondary school level is stressed.

242. Upholstery and Finishing (IA). I, S. 3 hr. PR: Ed. 102 (IA), 103 (IA) or equiv., and consent. Design and construction of upholstery units, reupholstery, finishing and refinishing. Construction of teaching units in these areas.

243. Advanced Ceramics (IA). II. 3 hr. PR: Ed. 121 (IA) or consent. Design in ceramics, construction of projects involving mold work, potter's wheel, and hand form methods. Experimentation with glazes including glaze composition. Development of suitable teaching aids involving ceramics.

244. Advanced Industrial Arts Crafts (IA). II, S. 3 hr. PR: Ed. 121 (IA). Experiments with crafts media in depth in the areas of plastics and leather. Development of suitable teaching units involving crafts materials.

246. Advanced Industrial Arts Graphics (IA). II, S. 3 hr. PR: Ed. 180 (IA) or equiv. Concentration in depth in one or more of the graphic arts media. Emphasis on offset methods of reproduction.

248. Advanced Electricity (IA). II, S. 2 hr. PR: Ed. 131 (IA) or equiv. Study of the technical phases of electricity with emphasis on planning shop courses, shop equipment and layout, and development of industrial aids.

249. Sheet Metal Pattern Development (IA). II, S. 3 hr. Layout problems involving parallel, radial, and triangulation methods. Construction of instructional units utilizing these principles.

250. Industrial Arts in Special Education (IA). II, S. 3 hr. Experimentation with industrial arts crafts suitable for instruction in special education classes. Discussion of factors involved in selection and manipulation of such media as leather, plastics, ceramics, wood, and metal.

251. Production of Audio-Visual Materials. I, II, S. 2 hr. PR: Ed. 221. Techniques of making audio-visual materials for use in teaching and school public relations programs are demonstrated. Individual projects of planning and producing materials are carried out by the student.

259. The Music Education Program. S. 3 hr. PR or parallel: Ed. 124 or consent. Organization and administration of the complete Music Education program for grades 1-12.

262. Vocational Home Economics in Secondary Schools. II. 3 hr. PR or parallel: Ed. 120, 124, 163; 25 hr. in Home Economics. Primarily for seniors and teachers of home economics.

270. Special Problems and Workshops. I, II, S. 2-4 hr. PR: 14 hr. in Education. To take care of credits for special workshops and short intensive unit courses on methods, supervision, and other special topics. Maximum of 8 semester hours may be applied toward the Master's degree, of which no more than 6 semester hours shall be in Extension.

271. Educational Measurement. I, II, S. 3 hr. PR: Consent. Background for educational measurement, the nature of evaluation, measuring and predicting pupil progress. Statistics include measures of central tendency, percentiles, variability, and simple correlation. First course in statistics and research.

272. Internship in Industrial Arts Therapy (IA). I, II, S. 8 hr. Internship in a clinical setting providing individualized instruction in the teaching techniques of industrial arts and therapeutic practices in rehabilitation of the handicapped.

274. Workshop: Economic Education. S. 3 hr. Workshop for principals, teachers, and supervisors with emphasis on the economic structure of our society and methods of integrating economics into the school program. Sponsored jointly by the College of Education and the College of Commerce.

275. Curriculum Principles and Patterns in General Education. II. 2 hr. PR: 6 hr. in undergraduate Education and senior rank. Major emphasis on principles, philosophy, and concepts of general education in secondary schools; means and ends in general education: core, subject matter, integrated studies, broad fields, activity.

276. Teaching Young and Adult Farmer Classes. I, S. 2 hr. PR: Ed. 100, 105, 106. Participation in conducting young and adult farmer classes and school-community food preservation centers; organization, course of study, and methods of teaching and supervision, and young farmers' association.

277. Organizing and Directing Supervised Farming Programs. II, S. 2 hr. PR: Ed. 160 or consent. Planning programs of supervised farming, supervising and evaluating such programs for all-day students, young farmers, and adult farmers.

284. Pupil-Personnel Administration. I, II, S. 2 hr. PR: Ed. 100, 105, 106. Pupil accounting, guidance, extracurricular activities, and control. Open only to senior students and graduates.

285. The Junior High School. I, II. 2 hr. PR: Ed. 100, 105, 106, and consent. Development, philosophy, program, and practices of the junior high school.

Secretarial Studies

51. Business Communications. II. 3 hr. PR: 6 hr. English composition and ability to type.

61. Typewriting. I. 2 hr. For students in the College of Education with a Commerce teaching field, or consent.

62. Typewriting. I, II. 2 hr. PR: Sec. Studies 61 or equiv. For students in the College of Education with a Commerce teaching field, or consent.

125. Shorthand. I. 4 hr. For students in the College of Education with a Commerce teaching field, or consent.

126. Shorthand. II. 4 hr. PR: Sec. Studies 125 or equiv. For students in the College of Education with a Commerce teaching field, or consent.

131. Secretarial Training and Office Practice. I. 3 hr. PR: Ability to type. For students in the College of Education with a Commerce teaching field, or consent.

132. Transcription. II. 2 hr. For students in the College of Education with a Commerce teaching field, or consent.

The College of Engineering and The School of Mines

COLLEGE OF ENGINEERING—ADMINISTRATION

Chester Abbo Arents, P.E., B.S.E.E., M.S.M.E., M.E., *Dean of the College of Engineering* (1955).

James Albert Kent, P.E., B.S.Ch.E., M.S.Ch.E., Ph.D., *Associate Director of the Engineering Experiment Station* (1963), 1954.

George William Weaver, P.E., B.S.M.E., M.S.M.E., *Assistant to the Dean, College of Engineering* (1961), 1948.

FACULTY OF THE COLLEGE OF ENGINEERING

Aerospace Engineering

Jerome Ben Fanucci, B.S., M.S.A.E., Ph.D., *Professor and Chairman of Aerospace Engineering* (1964).

Jonathan McCauley Bennett, *Chief Flight Instructor in Aerospace Engineering* (1956), 1951.

Donald Lee Cunard, B.S.A.E., *Instructor in Aerospace Engineering* (1963).

Ellis Edwin Mood, *Flight Instructor in Aerospace Engineering* (1956).

Walter Verner Mood, Jr., *Flight Instructor in Aerospace Engineering* (1964).

Nathan Ness, B.Ae.E., M.S., Ph.D., *Professor of Aerospace Engineering* (1964).

William Squire, B.S., M.A., *Professor of Aerospace Engineering* (1961).

Richard Edison Walters, B.S.A.E., M.S.A.E., *Instructor in Aerospace Engineering* (1959).

AGRICULTURAL ENGINEERING

Alfred Delbert Longhouse, P.E., B.S., M.S., Ph.D., *Professor and Chairman of Agricultural Engineering* (1945), 1938.

Waldo Emerson Bell, B.S.Ag.E., *State Extension Agricultural Engineering Specialist* (1945).

Edmond Byrl Collins, B.S.Ag.E., M.S.Ag.E., *Assistant Professor of Agricultural Engineering* (1962), 1960.

Chester Avis Cromer, B.S.Ag.E., M.S.Ag.E., *Assistant Professor of Agricultural Engineering* (assigned to Tanzania Agricultural College, Morogoro, Tanzania, East Africa) (1964).

Walter Howard Dickerson, P.E., B.S.C.E., B.S.Ag.E., M.S.Ag.E., *Professor of Agricultural Engineering* (1957), 1953.

Kendall Clark Elliott, B.S.Ag.E., M.S.Ag.E., *Assistant Professor of Agricultural Engineering* (1962), 1954.

Roy Eugene Emerson, B.S., M.S., *Associate Professor of Agricultural Engineering* (1957), 1940.

Glen Hayward Hetzel, B.S., *Instructor in Agricultural Engineering* (assigned to Egerton College, Kenya, East Africa) (1962).

Homer Willard Parker, P.E., B.S., *Instructor in Agricultural Engineering* (Project Leader, stationed with Department of Agricultural Engineering in cooperation with U.S. Forest Service Engineering Research Laboratory) (1964).

Ross Alonzo Phillips, P.E., B.S.A., B.S.Ag.E., M.S.Ag.E., *Assistant Professor of Agricultural Engineering* (1955).

Arthur William Selders, B.S., M.S.Ag.E., *State Extension Agricultural Engineering Specialist* (1963).

Gerald Elton Thierstein, B.S.Ag.E., M.S.Ag.E., *Assistant Professor of Agricultural Engineering* (assigned to Egerton College, Kenya, East Africa) (1962).

Robert Orrin Weedfall, B.S., *Instructor in Agricultural Engineering* (Climatologist, stationed with Department of Agricultural Engineering in cooperation with U.S. Weather Bureau) (1963).

Chemical Engineering

Howard Perry Simons, P.E., B.A., M.Sc., Ph.D., *Professor and Chairman of Chemical Engineering* (1959), 1939.

William Robert Boyle, B.S., M.S.N.E., *Instructor in Nuclear Engineering* (1961).

Harold Vincent Fairbanks, P.E., B.S., M.S.Ch.E., *Professor of Metallurgical Engineering* (1955), 1947.

Alfred Freddie Galli, P.E., B.S.Ch.E., M.S.Ch.E., *Associate Professor of Chemical Engineering* (1962), 1947.

Dean Owen Harper, B.S.Ch.E., M.S., *Assistant Professor of Chemical Engineering* (1963).

Paul Russell Jones, P.E., B.Cer.E., M.Sc., *Professor of Ceramic Engineering* (1957), 1947.

James Albert Kent, P.E., B.S.Ch.E., M.S.Ch.E., Ph.D., *Professor of Nuclear Engineering* (1958), 1954; *Associate Director, Engineering Experiment Station* (1963).

Chin-Yung Wen, B.S., M.S.Ch.E., Ph.D., *Professor of Chemical Engineering* (1964), 1954.

Civil Engineering

James Hamilton Schaub, P.E., B.S.C.E., S.M.C.E., Ph.D., *Professor and Chairman of Civil Engineering* (1960).

Wilfred Harmon Baker, P.E., B.S.C.E., M.S.C.E., *Professor of Civil Engineering* (1955), 1941.

Jack David Bakos, Jr., B.S.C.E., M.S.C.E., *Instructor in Civil Engineering* (1964), 1963.

Jerry Cameron Burchinal, P.E., B.S.C.E., M.S.C.E., *Professor of Civil Engineering* (1962), 1946.

Everett Charlie Carter, B.S.C.E., M. of E., *Assistant Professor of Civil Engineering* (1963).

Hsai-Yang Fang, B.S.C.E., M.S.C.E., *Instructor in Civil Engineering* (1963).

Ninnian Edward Hopson, B.C.E., M.S.C.E., *Instructor in Civil Engineering* (1961).

Charles Robert Jenkins, B.S., M.S., Ph.D., *Associate Professor of Sanitary Engineering* (1964), 1961.

Emory Leland Kemp, P.E., B.S., M.Sc., Ph.D., *Associate Professor of Civil Engineering* (1962).

Thomas David Labiosa, B.S.C.E., M.S.C.E., *Instructor in Civil Engineering* (1964), 1963.

Benjamin Linsky, P.E., B.S.M.E., M.S.E., *Professor of Sanitary Engineering* (Air Pollution) (1963).

Za-Lee Moh, P.E., B.S.C.E., M.S.C.E., Ph.D., *Associate Professor of Civil Engineering* (1962), 1961.

Lyle Kimball Moulton, B.S.C.E., M.S.C.E., *Instructor in Civil Engineering* (1963).

Donald Myron Onysko, B.S.C.E., D.I.C., *Instructor in Civil Engineering* (1963).

Byron Edward Ruth, P.E., B.S.C.E., M.S.C.E., *Instructor in Civil Engineering* (1961).

Electrical Engineering

Edwin Channing Jones, P.E., B.S.E.E., M.S.E.E., *Professor and Chairman of Electrical Engineering* (1948), 1925.

Wilford Dean Baker, B.S.E.E., *Instructor in Electrical Engineering* (1964).

David Franklin Barbe, B.S.E.E., M.S.E.E., *Instructor in Electrical Engineering* (1962).

Edwin Clyde Barbe, B.S.E.E., M.S.E.E., *Assistant Professor of Electrical Engineering* (1959), 1956.

Everette Charles Dubbe, P.E., B.S.E.E., *Associate Professor of Electrical Engineering* (1959), 1947.

John Robert Lang, Jr., B.S.E.E., *Instructor in Electrical Engineering* (1963).

Robert Edwin Michael, B.S.E.E., *Instructor in Electrical Engineering* (1963).

Mason Marcus Peterson, P.E., B.S.E.E., *Associate Professor of Electrical Engineering* (1948).

Frederick Ernest Raber, B.S.E.E., *Instructor in Electrical Engineering* (1964).
Marion Judson Smith, P.E., B.S.E.E., M.S.E.E., *Professor of Electrical Engineering* (1956), 1954.
Nelson Stuart Smith, Jr., P.E., B.S.E.E., M.S.E.E., D.Sc., *Associate Professor of Electrical Engineering* (1962), 1956.
Robert Earl Swartwout, B.S.E.E., M.S.E.E., Ph.D., *Professor of Electrical Engineering* (1963), 1962.
Ralph Hough Theophilus, P.E., B.S.E.E., Litt.M., M.Ed., *Associate Professor of Electrical Engineering* (1956).

Industrial Engineering

Raymond Edwin Shafer, P.E., B.S.I.E., M.S.I.E., *Professor and Chairman of Industrial Engineering* (1957), 1949.
J. Temple Black, B.S.I.E., M.S.I.E., *Instructor in Industrial Engineering* (1960).
Charles Caruthers Cook, P.E., B.S.M.E., M.S.I.E., *Assistant Professor of Industrial Engineering* (1960), 1957.
Charles Leroy Delaney, *Instructor in Shop Practice* (1950), 1945.
Steven James Dodd, B.S.I.E., M.S.I.E., *Instructor in Industrial Engineering* (1964).
Robert Durant Fowler, P.E., B.S.E.E., B.S.I.E., M.S.I.E., *Professor of Industrial Engineering* (1963), 1959.
Glenn Fayette Martin, *Instructor in Machine Shop and Welding Practice* (1940).
Joseph William Schmidt, Jr., B.S., M.S.I.E., *Instructor in Industrial Engineering* (1962).

Mechanical Engineering

Howard Wallace Butler, P.E., B.S.M.E., M.S., Ph.D., *Professor and Chairman of Mechanical Engineering* (1965).
John Anthony Adams, B.S.M.E., *Instructor in Mechanical Engineering* (1963).
Dean Edward Bluman, P.E., B.A., B.S.M.E., M.S.M.E., *Instructor in Mechanical Engineering* (1962).
David Lee Buskirk, M.S.N.E., *Instructor in Mechanical Engineering* (1965).
Harold Malcolm Cather, P.E., B.S.M.E., M.E., M.S.M.E., *Professor of Mechanical Engineering* (1960), 1916.
Robert James Charlton, B.S.A.E., *Instructor in Mechanical Engineering* (1963).
James Nelson Cope, B.S.M.E., *Instructor in Mechanical Engineering* (1965).
Hasan Tahsin Gencsoy, P.E., B.S.M.E., M.S.M.E., *Associate Professor of Mechanical Engineering* (1962), 1956.
James Francis Hamilton, P.E., B.S.M.E., M.M.E., Ph.D., *Professor of Mechanical Engineering* (1963), 1955.
Thomas Richard Long, B.S.M.E., M.S.M.E., *Instructor in Mechanical Engineering* (1958).
William Henry Loyd, P.E., B.S.M.E., M.S.M.E., *Instructor in Mechanical Engineering* (1964), 1963.
David Edward McKee, B.S.M.E., M.S.E., *Instructor in Mechanical Engineering* (1963).
Jerome Forest Parmer, P.E., B.S., M.S., Ph.D., *Associate Professor of Mechanical Engineering* (1964), 1957.
Robert Dean Slonneger, P.E., B.S.M.E., M.S.M.E., *Professor of Mechanical Engineering* (1963), 1954.

Theoretical and Applied Mechanics

Edward Ford Byars, P.E., B.M.E., M.C.E., Ph.D., *Professor and Chairman of Theoretical and Applied Mechanics* (1959).
Jimmy Piroshaw Balasara, B.E., M.S.C.E., *Instructor in Theoretical and Applied Mechanics* (1963).
Charles Richard Evces, B.S.M.E., M.S.M.E., *Instructor in Theoretical and Applied Mechanics* (1963).
Russell Rex Haynes, B.S.M.E., M.S.T.A.M., *Instructor in Theoretical and Applied Mechanics; Research Associate, Engineering Experiment Station* (1962).

WARREN GEORGE LAMBERT, B.S.M.E., M.S.E.M., PH.D., *Associate Professor of Theoretical and Applied Mechanics* (1964).

JAMES HARRY MCELHANEY, P.E., B.M.E., M.S.M.E., PH.D., *Assistant Professor of Theoretical and Applied Mechanics* (1965).

HELEN LESTER PLANTS, P.E., B.S.C.E., M.S.C.E., *Assistant Professor of Theoretical and Applied Mechanics* (1956), 1947.

ROBERT WESLEY SHREEVES, B.S.C.E., M.S.T.A.M., PH.D., *Associate Professor of Theoretical and Applied Mechanics* (1961).

ROBERT DOUGLAS SNYDER, B.S.M.E., M.S.M.E., PH.D., *Assistant Professor of Theoretical and Applied Mechanics* (1964).

THOMAS RAY VANCE, B.S.M.E., *Instructor in Theoretical and Applied Mechanics* (1963).

GEORGE WILLIAM WEAVER, P.E., B.S.M.E., M.S.M.E., *Professor of Theoretical and Applied Mechanics* (1962), 1948; *Assistant to Dean, College of Engineering* (1961).

DONALD THOMPSON WORRELL, P.E., B.S.E.E., M.S.E.E., *Professor of Theoretical and Applied Mechanics* (1945), 1941.

COLLEGE OF ENGINEERING VISITING COMMITTEE

EARLE T. ANDREWS, (*Chairman of Committee*), *President,* Pennsylvania Glass Sand Corporation, Hancock, Maryland.

JOSEPH P. GILLS, *Vice President and General Manager,* Appalachian Power Company, Roanoke, Virginia.

J. LEE MARSH, *Vice President,* Union Carbide Chemical Corporation, 270 Park Avenue, New York 17, New York.

FRANCIS M. RICH, *President,* Wheeling Steel Corporation, Wheeling, West Virginia.

WILLIAM M. THOMPSON, *Production Manager,* West Virginia Pulp and Paper Company, Luke, Maryland.

ENGINEERING EXPERIMENT STATION—ADMINISTRATION

CHESTER ABBO ARENTS, P.E., B.S.E.E., M.S.M.E., M.E., *Director* (1963), 1955.

JAMES ALBERT KENT, P.E., B.S.CH.E., M.S.CH.E., PH.D., *Associate Director* (1963), 1954.

CHARLES THOMAS HOLLAND, P.E., B.S.E.M., M.S.E.M., *Dean of the School of Mines* (1961), 1930.

HOWARD WALLACE BUTLER, P.E., B.S.M.E., M.S.M.E., PH.D., *Professor and Chairman of Mechanical Engineering* (1965).

EDWARD FORD BYARS, P.E., B.M.E., M.C.E., PH.D., *Professor and Chairman of Theoretical and Applied Mechanics* (1959).

JEROME BEN FANUCCI, B.S., M.S., PH.D., *Professor and Chairman of Aerospace Engineering* (1964).

EDWIN CHANNING JONES, P.E., B.S.E.E., M.S.E.E., *Professor and Chairman of Electrical Engineering* (1948), 1925.

ALFRED DELBERT LONGHOUSE, P.E., B.S., M.S., PH.D., *Professor and Chairman of Agricultural Engineering* (1945), 1938.

JAMES HAMILTON SCHAUB, P.E., B.S.C.E., S.M.C.E., PH.D., *Professor and Chairman of Civil Engineering* (1960).

RAYMOND EDWIN SHAFER, P.E., B.S.I.E., M.S.I.E., *Professor and Chairman of Industrial Engineering* (1957), 1949.

HOWARD PERRY SIMONS, P.E., B.A., M.SC., PH.D., *Professor and Chairman of Chemical Engineering* (1959), 1939.

FACULTY OF THE SCHOOL OF MINES

CHARLES T. HOLLAND, P.E., M.S.E.M., *Dean of the School of Mines; Director of Mining and Industrial Extension; Professor of Mining Engineering* (1961), 1930.

RICHARD WILLOUGHBY LAIRD, P.E., M.S.E.M., *Associate Professor of Petroleum Engineering* (1962), 1947.

JOSEPH DWIGHT MCCLUNG, P.E., B.S.E.E., M.S.E.M., *Associate Professor of Mining Engineering* (1961), 1941.

Ernest James Sandy, P.E., B.S.E.M., *Assistant Professor of Mining Engineering* (1957), 1947.
James Allen Wasson, M.S.P.E., *Assistant Professor of Petroleum Engineering* (1962), 1960.
Joseph Pasini, III, B.S., *Instructor* (part-time) *in Petroleum Engineering* (1963).
Roscoe Elton Hanna, Jr., P.E., B.S., *Supervisor Industrial Extension; Assistant Director of Fire Service Extension* (1949), 1944.
Claude Arwe Goode, P.E., B.S.E.M., *Assistant Director of Mining Extension* (1961), 1956.
Ralph Craddock Bierer, *Instructor in Mining Extension* (1952).
Leslie Emil Bradley, *Instructor in Mining Extension* (1945).
Ulysses Grant Carter, B.S., *Instructor in Mining Extension* (1957).
Luther Bennett Ferguson, *Instructor in Mining Extension* (1957).
William Henry MacKenzie, *Instructor in Mining Extension* (1945).
Peter Paul Mintreas, B.S., *Instructor in Mining Extension* (1961).
James Michael Morrison, *Instructor in Mining Extension* (1958).
George Henry Pudlo, B.S.E.M., *Instructor in Mining Extension* (1964).
Raymond A. Simpson, *Instructor in Fire Service Extension* (1962).
Hobart Watson, *Instructor in Mining Extension* (1925).
Leland Henry Winger, B.S.E.E., *Instructor in Mining Extension* (1952).

Visiting Committee

Veleair C. Smith (*Chairman of Committee*). *Management Consultant,* Kanawha Valley Building, Charleston, W. Va.
W. O. Barnard, *Vice President,* Clinchfield Coal Company, P. O. Box 472, Clarksburg, W. Va.
Wendell S. Moore, *Manager of Production,* Columbian Carbon Company, Embleton Building, P. O. Drawer 873, Charleston 23, W. Va.
Fred R. Toothman, *Engineer of Coal Properties,* Coal Development, Chesapeake & Ohio Railway Company, 701 C & O Building, Huntington, W. Va.
D. A. Zegeer, *Division Superintendent,* Bethlehem Mines Corporation, Elkhorn Division, Jenkins, Ky.

STAFF OF THE COAL RESEARCH BUREAU

Joseph W. Leonard, B.S.E.M., M.S., *Director* (1961).
Masood Akhtar, B.S.Pet.E., *Research Assistant* (1964).
Ali Ihsan Aktay, B.S., *Graduate Research Assistant* (1963).
Okley Bert Bucklen, B.S., *Research Engineer* (1963).
Tai-Ming Chang, B.S.Ch.E., *Graduate Research Assistant* (1963).
Charles Franklin Cockrell, B.S., *Project Engineer* (1963).
Bernard Albert Donahue, B.S., *Graduate Research Assistant* (1963).
James Martin Hager, A.A., B.S., *Research Chemist* (1964).
Jerry Ray Herndon, B.S.E.E., *Graduate Research Assistant* (1963).
Kathryn Huffman, A.B., M.S., *Research Chemist* (1964), 1944.
N. R. Kona, *Graduate Research Assistant* (1964).
William F. Lawrence, B.S., *Graduate Research Assistant* (1964).
Charles R. McFadden, B.S., *Research Assistant* (1962).
Philip G. Meikle, B.S.E.M., *Research Engineer* (1963).
Lanny M. Rauer, B.S.E.M., *Graduate Research Assistant* (1964).
Harry E. Shaffer, B.S., *Research Geologist* (1962).

General Information

THE COLLEGE OF ENGINEERING; THE SCHOOL OF MINES

For the purpose of administration and instruction, the College of Engineering is organized into the following departments:

Aerospace Engineering (A.E.)
Agricultural Engineering (Ag.E.)
Chemical Engineering (Ch.E.)
Civil Engineering (C.E.)
Electrical Engineering (E.E.)
Mechanical Engineering (M.E.)
Industrial Engineering (I.E.)
Theoretical and Applied Mechanics (T.A.M.)

For the purpose of administration the School of Mines is divided into the following divisions:

Mining Engineering (E.M.)
Petroleum Engineering (Pet.E.)
Mining and Industrial Extension
Coal Research Bureau

Curricula Accredited By The Engineers' Council For Professional Development

The Engineer's Council for Professional Development, a joint body concerned with the enhancement of the status of the engineer and the engineering profession, has been designated by its constituent bodies (American Society of Civil Engineers, American Institute of Mining, Metallurgical and Petroleum Engineers, The American Society of Mechanical Engineers, The Institute of Electrical and Electronics Engineers, The American Society for Engineering Education, American Institute of Chemical Engineers, American Institute of Aeronautics and Astronautics, National Council of State Boards of Engineering Examiners, and the Engineering Institute of Canada) as the co-ordinating agency for the accrediting of undergraduate engineering curricula in the United States.

Undergraduate curricula of the College of Engineering and the School of Mines are accredited by the Engineer's Council for Professional Development and include: aerospace, agricultural, chemical, civil, electrical, industrial, mechanical, and mining.

Buildings and Equipment

The *College of Engineering* is located on the Evansdale Campus, approximately a mile from the Main Campus and one-half mile from the Medical Center Campus. The main structure of the Engineering Center is a 14-floor building, featuring an 11-story tower on a 3-story base. The Center has been carefully planned to enable the College to accelerate its educational, research, and special programs—all designed to serve the State and the nation.

The *School of Mines* is housed in the Mineral Industries Building on the Main Campus.

The *University Hangar.* A steel 150-foot by 87-foot hangar was erected in 1963 to house the University's aircraft and to provide ground training classroom space at Morgantown Municipal Airport. A clear span hangar of 114 feet by 80 feet is provided for storage of aircraft. On one side of the hangar bay are the flight instructor offices, pilot's ready room, classrooms, and machine shop. A separate building, of all-metal construction, for storage of inflammable materials, is located away from the hangar to reduce the fire hazard.

The University owns five all-metal Cessna airplanes. Four are Cessna Model 150 aircraft which are used for the flight training program. A four-place Cessna Model 182 airplane is used by the Department of Aerospace Engineering in conjunction with a course in flight testing.

All of the Cessna airplanes are equipped with instruments for full-panel and partial-panel instrument flight instruction. A Link Instrument Trainer is used in conjunction with these airplanes to supplement the instrument flight training instruction. The airplanes are equipped with two-way radio equipment, including omni-directional range navigation radios.

The *Aerospace Engineering Laboratories* are located on the ground floor of the Engineering Sciences Building and in two separate structures located near the southwest corner of the building. The *Aerospace Structures Laboratory* has an area of 2,600 square feet. It is equipped with a specially designed reinforced floor and test wall for static testing of full-scale aerospace components. Space has also been provided in this laboratory for static and dynamic testing machines, and provisions have been made for testing and research at elevated temperatures.

The *Aerodynamics Laboratory Building* contains the wind tunnels and shops of the Department of Aerospace Engineering. The low-turbulence subsonic wind tunnel is used for instruction and research. This wind tunnel, a single-return type, has a test section area of 10 square feet and overall length of 60 feet. It is powered by a 100-horsepower, direct-current motor which provides an infinite range of air speeds from 0 to 200 miles per hour. The subsonic wind tunnel can be readily converted to indraft type operation for tests of a thermodynamic nature.

The supersonic wind tunnel is a continuous flow indraft type with a 4-inch by 5-inch test section. It is powered by three vacuum pumps, each of which is driven by a 150-horsepower synchronous motor. The wind tunnel is designed to operate at a Mach Number of 1.50. It is equipped with a by-pass system which permits model adjustments and model changing without shutting down the entire system.

The *Propulsion Laboratory* is located in a separate building near the Engineering Sciences Building. This laboratory is composed of a control room and a combustion cell, the latter having solid concrete walls.

The *Agricultural Engineering Laboratories* are in the Agricultural Engineering Building which contains approximately 30,000 square feet of floor area.

The *electric power and processing laboratory* is one of the best equipped laboratories in the country. Besides a 10/15 h.p. General Electric Dynamometer, it has four large work tables supplied with 120 and 240 volt A.C. circuits and 125 and 250 volt D.C. circuits controlled from a control distribution panel. The D.C. circuits are coupled to two MG sets which are also controlled at the distribution panel.

The *tractor and machinery laboratory* has a 45/60 h.p. General Electric Dynamometer and MG set. Mounted adjacent to it is an International Harvester Company truck machine where students learn internal combusion engine operations. Eventually a 3-drum chassis dynamometer will be connected to the General Electric Dynamometer on which tractors and machinery will be mounted for performance testing. When completed, the chassis dynamometer will be the only one of its kind in any department of agricultural engineering.

The *farm shop laboratory* is well equipped for training future vocational agriculture teachers and other agriculture students desiring to learn shop skills, construction materials, and shop practices.

The *research shop* contains a machine shop and welding facilities where research projects are constructed.

The *water sytems and hydraulic laboratory* contains two large concrete tanks on which water pumps and systems are mounted for study.

The *research laboratory* is devoted almost exclusively to research. At present, it serves as the center for instrumentation for research projects.

The *materials testing laboratory* is one of the most promising and unique facilities in agricultural engineering anywhere. Almost all of the department's instruction involving precision instruments and glassware are concentrated in this area. Two fume hoods are used when dusty, obnoxious, or inflammable substances are involved. Other facilities include numerous outlets for electricity, gas, water, steam, and air. A 25,000-pound mechanical testing machine is available.

Other areas in the building include: student lounge and reference room, farm building plan service, visual aids and darkroom, graduate assistants office, conference room, and department and staff offices.

The *Engineering Drawing Rooms*, located in Engineering Building No 1 on the Main Campus, are equipped with up-to-date drawing facilities.

The Department of Mechanical Engineering has devoted a considerable amount of effort toward the development of one of the most complete *heat transfer laboratories* in the country. Available for both undergraduate and graduate investigation are a guarded hot plate, a guarded hot pipe, environmental rooms, large constant humidity and temperature chambers, emissivity, reflectivity, and transmissibility measuring instruments, heat exchangers, temperature recorders, and instrumentation equipment.

The *Mechanical Engineering Laboratories*, covering 12,000 square feet, contain equipment for demonstrating the conversion of heat energy to useful work, and include facilities for instrumentation studies. The equipment consists of thermometers, thermocouples with potentiometer indicators, dead weight testers, manometers, Venturi meters, orifices, Pitot tubes, steam calorimeters, Orsat analyzers, steam and other equipment for instrumentation studies. Fuel and lubrication equipment includes a precision gas calorimeter, and a bomb calorimeter. The Mechanical Engineering computation facilities include analog computers of both the field and differential analyzer type with recording oscillographs. In addition, use is made of the University Computer Center's high-speed, solid-state digital computer.

Energy analyses are made on a two-stage air compressor, an adjustable pitch axial flow fan, a centrifugal pump, a modern steam turbine loaded with a dynamometer, a centrifugal fan, diesel electric power unit, automatic engine with dynamometer, a complete refrigeration cycle, and a CFR (cooperative fuel research) engine.

The *vibration laboratory* is equipped with a vibration performance testing machine, a harmonic and random motion shaker system, vibration indicator, sound level meter, and all the necessary auxiliary equipment to make complete vibration and noise analysis.

The *experimental machine design laboratory* enables students to use various stress analysis techniques to compare actual and theoretical values of stresses in machine members. This laboratory contains a complete set of strain gage equipment, stress-coating apparatus, and photostress equipment for static and dynamic loading.

The *electrical laboratory* has motor-generator sets which supply direct-current power to meet the special requirements of the laboratories. These motor-generator sets supplement the power available from the local power company.

The *machinery laboratory* has standard types of motors, generators, dynamometers, transformers, loading resistors, reactors, capacitors, and other standard equipment for demonstrating the principle of electrical machinery. Many special types of machines are also available, including special relay demonstration boards.

The *measurement laboratory* has many types of measuring instruments for use in measuring various electrical and magnetic quantities.

The *communications and electronics laboratory* has various electronic devices for testing and demonstrating equipment used in the field of electronics. Some ultra-high frequency equipment is available for microwave demonstration and measurement.

An *Analog Computer Center* has been established by the College of Engineering. The Center is operated by the Department of Electrical Engineering in conjunction with the instructional equipment of the Department. The Center is primarily used for research work of the College.

The Industrial Engineering *motion and time study laboratory* contains time-study watches, motion picture projection equipment, films, viewers and editors, motion picture camera, wink counter, and special timing equipment. A multi-purpose polygraph is available for recording pulse, blood pressure, and respiration. A portable oscillograph, equipped with an amplifier, is also available for research.

The *calculating laboratory* is equipped with modern, versatile machines which provide the student with a means of reaching numerical solutions quickly, thereby allowing more time for theoretical and advance detail study of many problems.

The *plant layout laboratory* enables the student to participate in a project which provides opportunity for practical application of the work covered in many industrial engineering courses.

The *human factors laboratory* is equipped with apparatus to enable the student to measure many of man's contributions and limitations in man-machine relationships.

The *manufacturing processes laboratories* are equipped to permit instruction to be given regarding metal-manufacturing processes. The laboratory equipment and specific processes include:

1. Basic or general purpose metal-cutting machine tools that permit demonstration of and practice in performing the basic metal-cutting operations of turning, drilling, milling, and planing. A gage laboratory permits non-precision and precision linear and angular measurement of the product.

2. Oxyacetylene welding and cutting, electric arc welding, and heliarc welding equipment permit demonstration and practice in these areas.

3. Foundry equipment for sand testing and bench molding, and a melting furnace for nonferrous metals permit the production of castings.

4. The department has a numerically controlled machine which is to be used for both instruction and research.

The Department of Theoretical and Applied Mechanics specializes in instrumentation for engineering research. Available are transducers for measuring pressure, force, temperature, displacement, etc. Amplifiers, filters and other modifying devices are in use. Various meters, oscilloscopes, magnetic oscillographs, cameras, etc., are available for instructional purposes and research.

The *experimental mechanics laboratories* include complete facilities for large-scale physical testing as well as small research labs for small-scale work. A unique feature of the large *structural laboratory* is a special load floor with a coordinate system of 50,000-pound capacity load points. The primary advantage of such a system is its extreme versatility, which is necessary in education and research. Complete research and instructional facilities are available including photoelastic and complete electric strain gage instrumentation laboratories as well as various small laboratories for individual research projects. A special research laboratory, completely equipped for bone research (biomechanics), is presently in operation with plans for expansion. Various capacity universal and special purpose test machines (torsion, fatigue, hardness, impact, etc.) are also available for student instruction and research.

The Department of Civil Engineering utilizes the facilities of the structural laboratory and is also equipped for class work and research in the other principal areas of civil engineering.

In the *hydraulic laboratory* students work together in comparatively small groups studying in three dimensions the configuration of flowing water and the devices for pumping water and measuring its velocity, volume, pressure, and weight which, at best, are unsatisfactorily illustrated in text material. The calculations, which are a part of each report, take on a new and physical meaning. Facilities are available to study the pumping of water, its energy loss in pipes and various types of meters, open channel flow, weirs, and orifices.

The *sanitary engineering laboratory* is well equipped for student and research work in the fields of water purification and sewage treatment. The aim is to give the student the opportunity to experiment with the physical, chemical, and biological characteristics of water. The degree of purification resulting from various forms of treatment is measured and the cost of the process is determined. Experience in the use of scientific equipment is gained, not as an end in itself, but as a by-product of the study of various forms of treatment on the water or sewage.

The *air pollution control engineering laboratory* is equipped with instruments to enable students to take samples of exhaust gases and dusts from vents and chimneys, and in the atmosphere, both outdoor and indoor. Analyses of the sampled pollutants, and correlation with measurements of the weather, enable students to engage in a wide range of research studies. Students also have access to a major collection of air pollution technical literature that is highly cross-indexed for rapid search and retrieval.

Through cooperation with other departments in the College of Engineering and elsewhere in the University, a wide range of sensitive gas and dust analytical instruments is available, including ultra-violet, infra-red, X-ray diffraction, gas chromatographs, and an electron microscope.

A complete array of *surveying equipment* is available for student use, including transits, levels, plane tables, compasses, tapes, and rods. Problems involving the use of this equipment in the field are designed primarily to help the student understand the underlying theory of surveying rather than to develop skill in the manipulation of instruments.

The *photogrammetry laboratory* is equipped with many of the elementary instruments for making both planimetric and topographic maps from aerial photographs. Available for the use of students who elect this course are stereoscopes, sketchmasters, radial planimetric plotters, stereocomparagraphs, an autofocusing reflecting projector, and a multiplex projector.

Through the cooperation of the *State Road Commission Testing Division,* a wealth of equipment is available for use by civil engineering students. In their senior year, they may elect the study of test methods used to determine whether construction materials comply with the specifications under which they were purchased. Becoming familiar with modern specifications and the reasons behind them is the main objective here. Proper manipulation of the equipment is necessary, but is only a small part of the benefit which comes from work done.

Design and drawing rooms are available and are completely equipped with modern facilities. Surveying classes work out graphical and analytical problems here as well as plot and finish maps. Highway design, structures, water supply, sewerage, and photogrammetry all require work in these rooms and they are frequently used by students for general work as well.

The laboratories for *Chemical Engineering* are well equipped for fundamental study and research in the various phases of heat, momentum and mass transfer and in rate processes. The *control laboratory* immediately adjacent is provided with the latest measurement and control instruments and a 45-amplifier analog computer for process dynamics and systems engineering. Special laboratories have been established for such studies as reaction kinetics and thermodynamic properties together with spectrophotometry, mass spectrometry, and chromatography facilities.

The *Materials Science Engineering Laboratories* in adjoining areas are completely equipped for the study of materials comprising metallurgical, ceramic, and synthetic substances used in the various engineering fields. Equipment available for use includes small-scale machinery for preparation of such materials and for microscopic photomicrographic, x-ray diffraction, and radiological examinations. Physical testing equipment is likewise available.

With the aid of a grant from the Atomic Energy Commission, the department is equipped for work in *Nuclear Engineering* on the undergraduate and graduate levels. A swimming pool reactor, a sub-critical reactor, and an electronic reactor simulator are available, and a graphite pile used for neutron studies has been installed. The laboratory is equipped with instruments for detection and measurement of radioactivity. A cobalt 60 source of moderate strength and one of high strength are used to study the effects of gamma radiation on chemical reactions.

The Department of Chemical Engineering also provides large *design and computation laboratories* for performing process calculations and plant layouts with latest modeling materials. The laboratories are serviced by a complete shop operated by a skilled mechanician, a complete materials stock room, and locker and shower facilities for students. Individual research laboratories for graduate students are also provided.

School of Mines Laboratories

The mining laboratories in the Mineral Industries Building are designed to supplement the technical instruction related to the various phases of mining and petroleum engineering and to correlate basic theory and principles with their application in industry.

The *mining laboratory* includes various types of electrical control systems commonly used with modern mining equipment, especially arranged to permit analysis of the electrical circuits and operating principles. Specimens of typical equipment for drilling, cutting, and blasting are included, together with key assembly parts of such units. There also are devices for demonstrating and determining the explosibility of suspended dusts, dust analysis equipment, apparatus for determining dust counts, and models showing methods of working anthracite and bituminous coal and mineral deposits.

The *mine ventilation laboratory* is equipped with centrifugal and multistage axial flow fans, together with the necessary facilities for demonstrating the principles of fluid flow as related to mine ventilation and determination of the performance characteristic of the fans used. A gas testing room is provided for practice and demonstration with flame safety lamps and other gas detection devices. The laboratory is provided with apparatus and facilities for air analysis; and the William Clifford and James T. Beard collection of safety lamps is of particular academic interest as related to the history and development of safe mine lighting.

The *fuels laboratory* is especially equipped for the analysis and study of fuels, with particular emphasis on coal and coke. The equipment includes analytical balances, calorimeters, drying and roasting ovens, fusion furnaces, and special equipment necessary for the proximate and ultimate analysis of coal and the determination of coking and ash fusion characteristics. An X-ray diffraction unit is available for special analytical work.

The *mineral beneficiation laboratory* is outstanding in its facilities for coal testing and in the variety of coal cleaning and preparation equipment provided. The testing equipment includes facilities for screen analysis, float and sink preparation, and the

various units required to reduce and prepare samples for laboratory analysis. The coal cleaning equipment available for instructional and research purposes includes a complete range of machines and methods employed in commercial installations for the beneficiation of coal and minerals. The principal cleaning and concentration equipment and methods are represented by self-contained pilot units with auxiliary equipment to permit complete test operation and are in addition to a wide range of individual devices for demonstration and instructional purposes.

The *petroleum and natural gas laboratory* contains a full range of equipment necessary for determination of the chemical and physical properties of oil and gases as related to their use, transmission, and production. Apparatus and facilities are provided for core analysis to determine saturations, porosity, permeability, and grain structure of producing sands, together with diamond core drills and saws for the preparation of samples for such tests. A completely equipped rotary drilling mud laboratory is provided for all types of pilot testing. Also included are various specimens of drilling and other production equipment for instruction and demonstration. The gas measurement section includes bell-types, critical flow, and low pressure flow provers for testing meters of various types. Also provided is a wide range of domestic, orifice, and large capacity displacement meters with the necessary meter runs for their operation.

Special equipment for instruction in *geophysics* is provided, and the School maintains an earth-movement recording seismograph station, operated in accordance with standards approved by the U. S. Coast and Geodetic Survey, for recording earthquakes and the movement of severe storm zones. Portable blast seismic instruments are available for field testing demonstration.

National Societies

Student chapters of several national professional societies are maintained. They include the American Institute of Aeronautics and Astronautics, American Society of Agricultural Engineers, American Institute of Chemical Engineers, American Society of Civil Engineers, The Institute of Electrical and Electronics Engineers, American Institute of Mining, Metallurgical, and Petroleum Engineers, American Society of Mechanical Engineers, and American Institute of Industrial Engineers. Meeting of the student chapters are held monthly.

The West Virginia Alpha Chapter of *Tau Beta Pi* was installed on June 3, 1922. Tau Beta Pi is the honorary engineering fraternity. Eligible for membership are candidates for the Bachelor of Science Degree in Aerospace, Agricultural, Chemical, Civil, Electrical, Industrial, Mechanical, and Mining Engineering who have maintained a rank in scholarship in the highest one-fifth of the class.

The West Virginia Upsilon Chapter of *Sigma Gamma Epsilon* was installed May 27, 1927. Sigma Gamma Epsilon is an honorary mineral industries fraternity with chapters in thirty of the leading universities. Seniors and juniors in mining engineering and majors in metallurgy and ceramics in chemical engineering who have attained high scholarship rank are eligible for membership.

The West Virginia Theta Chapter of *Omega Chi Epsilon* was installed April 15, 1958. This is an honorary chemical engineering society with chapters in eight leading universitites. Junior, senior, and graduate students who have attained high scholastic rank and have demonstrated outstanding traits of character and integrity are eligible for membership.

The West Virginia Pi Gamma Chapter of *Pi Tau Sigma* was installed March 31, 1942. This is an honorary mechanical engineering fraternity with chapters in sixty-seven universities. Seniors and juniors in mechanical engineering who have attained a high scholastic rank are eligible for membership.

The West Virginia Beta Rho Chapter of *Eta Kappa Nu,* national electrical engineering honorary, has qualifications for membership which distinctly stimulate and reward high scholarship. Students in the upper one-fourth of the junior class and the upper one-third of the senior class who have high scholastic standings and good character are eligible for membership. A loan fund is maintained by the local chapter for students enrolled in engineering.

The West Virginia Chapter of *Chi Epsilon* was installed May 14, 1949. This honorary civil engineering fraternity has chapters in fifty-seven colleges and universities. Seniors and juniors in civil engineering who have attained a high scholastic rank are eligible for membership.

The West Virginia Chapter of *Alpha Pi Mu* was installed May 14, 1955. This is an honorary industrial engineering fraternity with chapters in twenty-four universities having accredited curricula. Senior and junior industrial engineering students who have attained high scholastic rank are eligible for membership.

The West Virginia Chapter of *Sigma Gamma Tau* was installed May 21, 1955. This honorary aerospace engineering society has chapters in nineteen leading universities and colleges. The society recognizes and honors juniors and seniors who have through scholarship, integrity, and outstanding achievement been a credit to West Virginia University.

STANDING COMMITTEES

Engineering Schedules: Professor E. C. Jones.
Library: Professors Slonneger and Squire; Associate Professor Jenkins.
Committee on Scholarship: Professors M. J. Smith, Baker, and Fairbanks; Associate Professor Theophilus; Assistant Professors Phillips and Sandy; Instructor Long.
Course Waivers and Substitutions: Dean Arents; Professors Burchinal, Fowler, and R. P. Jones; Associate Professor Gencsoy.
Procedures Committee: Professors Weaver and Slonneger; Associate Professor Dubbe.
Graduate Programs Executive Committee: Dean Arents; Professors Butler, Byars, Fanucci, E. C. Jones, Kent, Schaub, and Simons.
Undergraduate Curriculum Committee: Professors E. C. Jones, Baker, and Simons.
Graduate Curriculum Committee: Professors Kent, Ness, and Worrell; Associate Professors Kemp and N. S. Smith.

Requirements for Degrees

Any student, in order to be eligible to receive a Bachelor's degree in any branch of engineering for which degrees are offered, in addition to satisfying all entrance requirements, shall be required to complete satisfactorily the number of semester hours of work as specified in the curriculum of the department leading to the degree for which the student is a candidate, plus the general requirements of physical education, military or air science, and English proficiency by the University for such a degree.

A grade of "C" or better must be attained in each mathematics course before registration in a subsequent mathematics course is allowed. This rule shall not apply to Math. 2, 3, 4, 7, and 14.

THE COLLEGE OF ENGINEERING CURRICULA

The several four-year curricula are set up to give, in the first two years, a well-rounded training in the basic sciences of mathematics, chemistry, and physics, and in English.

This is followed by such technical subjects as mechanics, thermodynamics, and electricity. The degree of emphasis varies somewhat with the curriculum followed. These courses bridge the gap between the pure sciences and the professional courses. In addition, courses in the humanities are given throughout the four years.

In the third and fourth years, special emphasis is placed on the professional work of the engineer. In these years a certain number of credit hours are available for electives.

The curricula are:

1. A four-year curriculum leading to the degree of Bachelor of Science in Aerospace Engineering.
2. A four-year curriculum leading to the degree of Bachelor of Science in Agricultural Engineering.
3. A four-year curriculum leading to the degree of Bachelor of Science in Chemical Engineering.
4. A four-year curriculum leading to the degree of Bachelor of Science in Civil Engineering.

5. A four-year curriculum leading to the degree of Bachelor of Science in Electrical Engineering.
6. A four-year curriculum leading to the degree of Bachelor of Science in Industrial Engineering.
7. A four-year curriculum leading to the degree of Bachelor of Science in Mechanical Engineering.
8. Combined science and engineering curricula extending over five or more years leading to the Degree of Bachelor of Science and Bachelor of Science in Engineering.

Plan for Numbering Courses

For convenience it is customary to designate the course of study by the name of the department or group of departments and the number of the particular course. Whenever reference is made to engineering courses in the course announcements and textual matter, the department or groups will be indicated as follows:

Aerospace Engineering	A.E.	Materials Science Engineering	Mat.E.
Agricultural Engineering	Ag.E.	Nuclear Engineering	Nuc.E.
Chemical Engineering	Ch.E.	Theoretical and Applied Mechanics	T.A.M.
Civil Engineering	C.E.	Mining Engineering	E.M.
Electrical Engineering	E.E.	Petroleum Engineering	Pet.E.
Industrial Engineering	I.E.	General	G.
Mechanical Engineering	M.E.		

The plan for numbering courses is as follows:

Courses 1 to 99—intended primarily for freshmen and sophomores.
Courses 100 to 199—junior and senior courses not open to graduates.
Courses 200 to 299—advanced courses for juniors, seniors, and graduates.

Classification of Students

To be classified as a freshman in the College of Engineering or the School of Mines, a student must have credit for at least 15 units of entrance requirements. To be classified as a sophomore he must have credit toward his degree for 30 hours; as a junior 72 hours; as a senior 112 hours; except that a student who is a candidate for the degree of Bachelor of Science to be classified as a sophomore must have credit for 27 hours of college work, as a junior, 60 hours; as a senior, 94 hours.

CURRICULUM IN AEROSPACE ENGINEERING

Degree: Bachelor of Science in Aerospace Engineering

Aerospace Engineering embraces the science and technology of all vehicles which are not bound to the earth. This includes all types of aircraft, rockets, missiles, and spacecraft, whether flight takes place in the atmosphere or beyond it.

The Aerospace Engineering Curriculum includes the disciplines encountered in the design of all of these vehicles. In addition to aerodynamics and structures, the aerospace engineer must now be familiar with propulsion systems and control and guidance systems. The curriculum may serve as a terminal program by incorporating design oriented courses for the technical electives, or it may be used as a preparatory program for advanced study by the selection of science oriented courses for these technical electives.

Aerospace Engineering theory and laboratory courses are scheduled in the curriculum to complement each other, so that the greatest benefit may be derived from both. The laboratory courses also provide the students with the opportunity to become familiar with modern laboratory instrumentation and research methods.

The Department of Aerospace Engineering operates seven laboratories:

Subsonic Wind Tunnel—A 200 mph low-turbulence wind tunnel is used for research and to supplement lecture courses in theoretical and applied subsonic aerodynamics.

Supersonic Wind Tunnel—A Mach 1.50 continuous-flow indraft-type wind tunnel is used for research and instruction, particularly at the graduate level.

Aerospace Structure Laboratory—To complement classroom work dealing with the theory of aerospace vehicle structural analysis.

Propulsion Laboratory—For undergraduate and graduate electives in this area.

Design Laboratory—For third- and fourth-year courses in detail, aerodynamic, and structural design.

Flight Test Airplane—A Cessna Model 182 airplane is used as a flying laboratory for a course in flight testing.

Flight Hangar—Hangars University-owned aircraft. Some of the airplanes are used for flight training instruction.

FIRST YEAR AEROSPACE ENGINEERING

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Chem. 1—Inorganic Chem.	4	Chem. 2—Inorganic Chem.	4
English 1—Comp. and Rhet.	3	English 2—Comp. and Rhet.	3
G. 1—Engineering Lectures	Cr.	Math. 116—Calculus	4
Math. 15—Calculus	4	Physics 11—General Physics	4
M.E. 20—Eng'g. Draw and Graphics	3	Mil. Sci. 2 or Air Sci. 2	2
Mil. Sci. 1 or Air Sci. 1	2	Phys. Ed. 2—General Program	1
Phys. Ed. 1—General Program	1		
	17		18

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Humanities 1	3	Humanities 2	3
Math. 117—Calculus	4	Math. 253—Adv. Applied Math.	3
Physics 102—General Physics	4	Physics 124—Intro. to Mod. Physics	4
Speech 11—Public Speaking	3	T.A.M. 102—Mech. of Materials I	3
T.A.M. 101—Statics	3	T.A.M. 104—Dynamics	3
Mil. Sci. 3 or Air Sci. 3	2	Mil. Sci. 4 or Air Sci. 4	2
	19		18

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
A.E. 116—Intro. to Flight Veh.	3	A.E. 209—Flight Mechanics	3
A.E. 201—Fluid Dynamics I	4	A.E. 210—Flight Veh. Struc. I	3
Math. elective	3	A.E. 223—Fluid Dynamics II	3
M.E. 120—Eng'g. Thermodynamics	3	E.E. 105—Electrical Fund.	4
Non-technical elective	3	English 126—Adv. Comp.	3
T.A.M. 103—Mech. of Materials II	3	Non-technical elective	3
	19		19

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
A.E. 205—Exp. Fluid Dynamics	2	A.E. 213—Exp. Flight Veh. Struc.	1
A.E. 207—Flight Veh. Design	3	Mat.E. 250—Mat'l. Sci. Eng'g.	3
A.E. 211—Flight Veh. Struc. II	3	M.E. 230—Heat Transfer	3
A.E. 224—Flight Veh. Propulsion	3	Non-technical elective	3
E.E. 145—Electronic Fund.	4	Technical electives	6
Inspection Trip	Cr.		
Non-technical elective	3		
	18		16

Non-technical electives may be selected from the following list of subjects: Sociology, Philosophy, History, Political Science, Psychology, and Economics. The 12 semester credit hours must consist of at least three of these subjects.

Technical electives must be selected from Aerospace Engineering courses in the 200 series or from advanced mathematics.

CURRICULUM IN AGRICULTURAL ENGINEERING

Degree: Bachelor of Science in Agricultural Engineering

Agricultural Engineering is the application of engineering principles to agriculture. Success in the application of engineering fundamentals to the agricultural industry requires knowledge of both the biological and physical sciences. The purpose of the course is to give the student general training in agricultural and engineering fundamentals. Considerable stress is given to basic requirements of plant and animal life which affect engineering practices, but greater emphasis is placed on a thorough knowledge of those underlying principles and methods which are the foundation of all the engineering professions.

Although the curriculum gives no opportunity for specialization, Agricultural Engineering is made up of four major fields. These are: Farm Power and Machinery, Farm Structures, Soil and Water Conservation, and Electric Power and Processing.

Students preparing to take Agricultural Engineering should present for entrance as many units as possible in mathematics, chemistry, and physics.

Some of the organizations and industries employing agricultural engineers are electric power companies and cooperatives; farm machinery manufacturers and distributors; manufacturers and distributors of building materials; oil companies; electric equipment and other suppliers of farm utilities; trust companies; farm management agencies; federal agencies such as Soil Conservation Service, U. S. Department of Agriculture, Federal Land Bank, and Indian Service; colleges and universities; Army and Navy, and foreign governments.

FIRST YEAR AGRICULTURAL ENGINEERING

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
English 1—Comp. and Rhet.	3	English 2—Comp. and Rhet.	3
Chem. 1—Inorganic Chem.	4	Chem. 2—Inorganic Chem.	4
Math. 15—Calculus	4	Math. 116—Calculus	4
M.E. 20—Eng'g. Draw and Graphics	3	Physics 11—General Physics	4
Mil. Sci. 1 or Air Sci. 1	2	Mil. Sci. 2 or Air Sci. 2	2
Phys. Ed. 1—General Program	1	Phys. Ed. 2—General Program	1
	17		18

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Ag.E. 10—Intro. to Agr. Eng'g.	3	Physics 124—Intro. to Mod. Physics	4
Physics 102—General Physics	4	Math. 253—Adv. Applied Math.	3
Math. 117—Calculus	4	T.A.M. 102—Mech. of Materials I	3
T.A.M. 101—Statics	3	Econ. 52—Principles	3
Econ. 51—Principles	3	M.E. 121—Thermodynamics	3
Mil. Sci. 3 or Air Sci. 3	2	Mil. Sci. 4 or Air Sci. 4	2
	19		18

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
M.E. 26—Eng'g. Draw. and Graphics	2	C.E. 115—Fluid Mechanics	3
E.E. 105—Electrical Fundamentals	4	E.E. 205—Electrical Fundamentals	4
T.A.M. 103—Mech. of Materials II	3	C.E. 1—Surveying	2
T.A.M. 104—Dynamics	3	M.E. 109—Mechanism	2
Humanities 1	3	Humanities 2	3
English 126—Adv. Comp. *OR* Speech 11—Public Speaking	3	Agron. 2—Soils	3
	18		17

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
AI & VS 51—Prin. of Animal Sci. *OR*		Ag.E. 201—Agricultural Structures	3
Hort. 52—Prin. of Plant Sci.	4	Ag.E. 290—Elements of Machinery Design	3
Ag.E. 230—Farm Power	3	Ag.E. 210—Application of Elect.	3
Ag.E. 250—Soil and Water Conserv.	3	Rural Sociol. 105—Sociol. of Rural Life	3
M.E. 201—Des. of Mach. Members	3	Electives	6
Agr. Econ. elective*	3-2		
Electives	3-4		
	19		18

*Agricultural Economics electives must be chosen from Agr. Econ. 240, 261, or 271.

CURRICULUM IN CHEMICAL ENGINEERING

Degree: Bachelor of Science in Chemical Engineering

The standard four-year course in chemical engineering has been developed to qualify young men for positions in operation, design, construction, and management of manufacturing plants in which raw materials are subjected to chemical and physical changes to produce finished products.

This curriculum includes fundamental courses in mathematics through differential equations; inorganic, organic, and physical chemistry; physics; basic engineering principles, calculations, thermodynamics, and kinetics, design and economics, unit operations, process dynamics, and statistics. This curriculum provides the student with a broad foundation in the fundamental principles of those subjects which wide experience has shown to be essential for successful careers in the chemical engineering profession; or as engineers in any industry involving chemical processing.

To complete the requirements for the Bachelor of Science in Chemical Engineering degree in four years, students should follow the curriculum as outlined.

Students preparing to take Chemical Engineering should present for entrance as many units as possible in mathematics, chemistry, and physics. It is desirable, also, to have units in German, French, or Russian. While certain basic courses in English and public speaking are required in the regular curriculum, a student will obtain a broader education in economics, history, language, science, and engineering by taking the combined Bachelor of Science and Chemical Engineering courses. By a careful selection of electives, both degrees may be earned in five years.

In recognition of the increasing tendency on the part of industry to promote engineers to administrative and executive positions, the curriculum has been broadened to include more required work in the field of humanities. Additional elective courses may be selected from the humanities and business administration courses.

In addition to the demand for students trained in chemical engineering, there is considerable demand throughout the State for men trained in Materials Science Engineering. These fields are closely allied with chemical engineering. A basic course in Materials Science is recommended for all students seeking a degree in chemical engineering. In addition, students may elect courses in this area in their undergraduate and especially in their graduate programs. These courses are integrated with the chemical engineering courses, making use of many of the fundamental concepts common to these categories.

The department is a part of the Engineering Experiment Station. The combined facilities of the department and the station are available for investigation and research. The greater number of projects are so selected that graduate students, and to some extent undergraduate students, participate in the program.

FIRST YEAR CHEMICAL ENGINEERING

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
English 1—Comp. and Rhet.	3	English 2—Comp. and Rhet.	3
Chem. 3—Inorganic Chem.	5	Chem. 4—Inorganic Chem.	5
Math. 15—Calculus	4	Math. 116—Calculus	4
G. 1—Engineering Lectures	Cr.	Physics 11—General Physics	4
Mil. Sci. 1 or Air Sci. 1	2	Mil. Sci. 2 or Air Sci. 2	2
Phys. Ed. 1—General Program	1	Phys. Ed. 2—General Program	1
	15		19

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Math. 117—Calculus	4	Math. 253—Adv. Applied Math.	3
Chem. 260—Physical Chem.	3	Chem. 261—Physical Chem.	3
Humanities 1	3	Humanities 2	3
Physics 102—General Physics	4	Physics 125—Intro. to Mod. Physics	3
T.A.M. 101—Statics	3	T.A.M. 104—Dynamics	3
Mil. Sci. 3 or Air Sci. 3	2	Mil. Sci. 4 or Air Sci. 4	2
	19		17

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Hum-Social (elective)	3	Math. elective	4
Chem. 233—Organic Chem.	4	Chem. 238—Organic Chem.	4
Ch.E. 201—Ch.E. Fund.	3	Ch.E. 202—Ch.E. Fund.	3
Ch.E. 242—Thermo. and Kinetics	3	Ch.E. 243—Thermo. and Kinetics	3
Ch.E. 248—Stat. Des. of Experiments	2	E.E. 105—Electrical Fundamentals	4
Physics 126—Intro. to Mod. Physics	3	Hum-Social (elective)	3
	18		20

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Hum-Social (elective)	3	Hum-Social (elective)	3
T.A.M. 102—Mech. of Materials	3	Speech 11—Public Speaking	3
Ch.E. 206—Ch.E. Oper.	3	Ch.E. 208—Ch.E. Oper.	3
Ch.E. 272—Design	2	Ch.E. 211—Ch.E. Lab.	2
Ch.E. 283—Proc. Dynamics	3	Ch.E. 273—Design	2
English 126—Adv. Comp.	3	Technical elective	3
Technical elective	3		
	20		16

Six hours of a modern foreign language may be taken in place of English 126 or Speech 11. English 126 will be required if the average grade in English 1 and 2 is "C" or less.

CURRICULUM IN CIVIL ENGINEERING

Degree: Bachelor of Science in Civil Engineering

The civil engineering curriculum has been planned to give a broad coverage of those general and scientific subjects that form the foundation of all engineering and special training in the civil engineering field. General subjects are included in all semesters of the four-year program. These are intended to improve and enrich the student's understanding of man's relation to man and they have been classified as communications, humanities, and social consciousness courses. In addition to drawing, physics, and mathematics, which form the roots of any engineering course, the student investigates such fields as chemistry and geology which give a breadth of scientific training.

A comprehensive study of earth measurements and survey engineering is scheduled for the summer following the first year. Training at the professional level in photogrammetry and geodesy may be elected during the fourth year to round out this work.

Courses in theoretical and applied mechanics, thermodynamics, and electrical engineering furnish breadth of training in engineering subjects and depth of training comes from professional work in transportation, structural and sanitary engineering, and soil mechanics, any of which may be the specialty of the civil engineer.

The civil engineering professional field is too broad to be covered thoroughly in a four-year course. For this reason, primary emphasis is placed on engineering fundamentals. A degree of professional specialization is still possible, however. The student, during his last year, may select specialized courses in the fields of transportation, sanitary engineering, structural engineering, or soil mechanics.

The State Road Commission of West Virginia and the Department of Civil Engineering offer a cooperative program in which the student divides his time between formal education and practical experience. One or more semesters are spent each year pursuing the regular Civil Engineering curriculum in school and for the remainder of the time the trainee is employed by the State Road Commission, where all possible advantage is taken of the engineering theory which the student has studied. The student's pace through the curriculum is determined primarily by his financial position. Upon successful completion of the program, the regular B.S.C.E. degree is granted and the trainee is offered an engineering position with the S.R.C.

FIRST YEAR CIVIL ENGINEERING

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Chem. 1—Inorganic Chem.	4	Chem. 2—Inorganic Chem.	4
English 1—Comp. and Rhet.	3	English 2—Comp. and Rhet.	3
G. 1—Engineering Lectures	Cr.	Math. 116—Calculus	4
Math. 15—Calculus	4	Physics 11—General Physics	4
M.E. 20—Graphic Science I	3	Mil. Sci 2 or Air Sci. 2	2
Mil. Sci. 1 or Air Sci. 1	2	Phys. Ed. 2—General Program	1
Phys. Ed. 1—General Program	1	C.E. 100—Intro. to Civil Eng'g.	1
	17		19

SUMMER

C.E. 102—Survey Engineering (five weeks) 6

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Humanities 1	3	Humanities 2	3
Math. 117—Calculus	4	Math. 240—Diff. Equations *OR* Math. 253—Adv. Appl. Math.	3
T.A.M. 101—Statics	3	T.A.M. 102—Mech. of Materials I	3
Physics 102—General Physics	4	T.A.M. 104—Dynamics	3
Mil. Sci. 3 or Air Sci. 3	2	Physics 124—Modern Physics	4
		Mil. Sci. 4 or Air Sci. 4	2
	16		18

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
C.E. 115—Fluid Mechanics	3	C.E. 146—Sanitary Eng'g. I	3
C.E. 131—Highway Eng'g.	4	C.E. 160—Structural Analysis I	5
Geol. 1—General Geology	3	C.E. 280—Soil Mechanics	3
M.E. 121—Thermodynamics	3	E.E. 105—Electrical Fund.	4
T.A.M. 103—Mech. of Materials II	3	Non-technical elective	3
Non-technical elective	3		
	19		18

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
C.E. 147—Sanitary Eng'g. II	3	C.E. 221—Eng'g. Hydraulics	3
C.E. 260—Struct. Analysis II	3	C.E. 271—Struct. Design II	3
C.E. 270—Struct. Design I	3	English 126—Adv. Composition *OR* Speech 11—Public Speaking	3
Mat.E. 250—Mat'ls. Sci. Eng'g.	3	Non-technical elective	3
Non-technical elective	3	Science or Eng'g. Sci. elective	3
Technical elective	3	Technical elective	3
	18		18

Six hours of a modern foreign language may be taken in place of English 126 or Speech 11. English 126 will be required if the average grade in English 1 and 2 is "C" or less.

Technical electives must include at least one course in Civil Engineering.

Non-technical electives must be selected from the areas of social sciences and humanities.

CURRICULUM IN ELECTRICAL ENGINEERING

Degree: Bachelor of Science in Electrical Engineering

The course in electrical engineering has been developed for the purpose of giving the student who completes the course general training in engineering fundamentals and broad training in the field of electrical engineering. Special training in the electrical power field or the communications field is available as electives in the senior year.

In the first two years of electrical engineering, the work is limited mostly to those subjects which are essential as preparatory courses for the more technical courses in the third and fourth years.

During the third year, fundamental courses in electrical engineering are introduced. Two courses in modern physics are included.

In the fourth year the curriculum is mainly courses in electrical engineering, and electives. Non-technical electives to help satisfy the University Core Curriculum, technical electives to offer courses of special interest to the student and an advanced mathematics elective. These electives will be of special interest to students planning to enter graduate school.

FIRST YEAR ELECTRICAL ENGINEERING

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Chem. 1—Inorganic Chem.	4	Chem. 2—Inorganic Chem.	4
English 1—Comp. and Rhet.	3	English 2 —Comp. and Rhet.	3
G. 1—Engineering Lectures	0	Math. 116—Calculus	4
Math. 15—Calculus	4	Physics 11—General Physics	4
M.E. 20—Eng'g. Draw. & Graphics	3	Mil. Sci. 2 or Air Sci. 2	2
Mil. Sci. 1 or Air Sci. 1	2	Phys. Ed. 2—General Program	1
Phys. Ed. 1—General Program	1		
	17		18

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Humanities 1	3	Humanities 2	3
Math. 117—Calculus	4	E.E. 25—Electrical Circuits	4
Physics 102—General Physics	4	Math. 253—Adv. Applied Math.	3
T.A.M. 101—Statics	3	Speech 11—Public Speaking	3
Mil. Sci. 3 or Air Sci. 3	2	T.A.M. 104—Dynamics	3
		Mil. Sci. 4 or Air Sci. 4	2
	16		18

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Econ. 51—Principles	3	Econ. 52—Principles	3
E.E. 125—Electrical Circuits	4	E.E. 152—Electronics	4
E.E. 126—Electric & Mag. Fields	3	E.E. 225—Electric Circuits	4
English 126—Adv. Comp.	3	E.E. 226—Electromagnetic Fields	3
Physics 125—Intro. to Mod. Physics	3	Physics 126—Intro. to Mod. Physics	3
T.A.M. 102—Mech. of Materials I	3		
	19		17

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
E.E. 200—Seminar	0	C.E. 115—Fluid Mechanics	3
E.E. 232—Electromechanical Dev.	4	E.E. 233—Electromechanical Dev.	4
E.E. 252—Electronics	3	E.E. 262—Electronics & Comm. Lab.	2
Math. elective	3	E.E. 270—Eng'g. Analy. & Design	3
M.E. 121—Thermodynamics of Eng'g.	3	Non-technical electives	3
Non-technical electives	3	Technical electives	3
Technical electives	3		
	19		18

Electives

Non-technical electives shall be selected from courses approved for University Core Curriculum requirements in the following subjects: Economics, History, Political Science, Psychology, and Sociology.

Six hours of a modern foreign language may be taken in place of English 126 or Speech 11. English 126 will be required if the average grade in English 1 and 2 is "C" or less.

Technical electives shall be selected from the following: Advanced Mathematics, Advanced Physics, or an engineering course in the 200 series.

NOTE: Students enrolled in the Department of Electrical Engineering will not be allowed to register in any Electrical Engineering course unless he has obtained a grade of "C" or better in all its prerequisite Electrical Engineering courses.

To be eligible for graduation, a student enrolled in the Department of Electrical Engineering must attain a passing grade in all electrical engineering courses for which he has registered, except for courses with grades of "W" and "WP".

CURRICULUM IN INDUSTRIAL ENGINEERING

Degree: Bachelor of Science in Industrial Engineering

Industrial Engineering is a relatively new branch of engineering. The industrial engineer must combine his knowledge of engineering principles with everyday manufacturing operations in order that the product be produced in sufficient quantities at minimum cost. The field of the industrial engineer is that of the process, production, and cost expert engaged in planning, organizing, improving, managing, and operating the various procedures in producing all kinds of manufactured products.

The purpose of the curriculum in industrial engineering is to provide training for those students who are interested in the managerial and technical activities of the engineering field. Industrial engineering is, basically, engineering with its foundation in mathematics and the sciences, with emphasis upon the human factors and the economic aspects which are essential in engineering work.

There are many new problems challenging industry. Industrial engineers are being called upon more and more to answer this challenge. Their job is to coordinate man, machine, and method into a smooth-running organization.

The first and second years are devoted to basic courses in English, mathematics, chemistry, physics, statics, mechanics of materials, graphics, and manufacturing processes which are essential to the more technical courses which follow in the third and fourth years.

Industrial engineering includes motion and time study analysis for work simplification and standardization, control of quality, control of quantity through use of production control techniques, and control of labor costs through use of such management activities as job evaluation and wage incentives.

The laboratories provide the student with practice in the various phases of industrial engineering. Facilities are also available for research and development of methods and procedures for manufacture and control.

Besides giving the engineering fundamentals, industrial engineering provides for basic course work in the fields of mechanical and electrical engineering. The studies provide for intensive training in the various branches of industrial engineering. The specialization courses starting in the junior year are planned for progressive instruction in the principles and techniques of industrial engineering as practiced in industry.

Statistics has been increasing steadily as a tool in industrial engineering. One of its greatest contributions in recent years has been in the control of quality of manufactured products by statistical method. Recent additions to the curriculum prepare students for more advanced statistical analysis, as may be applied to production and costs as well as research. Among the newer courses, which advanced and graduate students may choose to investigate, are the concepts and theories of Operations Research, such as linear programming, queueing, theory of games, and statistical inventory control.

West Virginia has many types of industries in which industrial engineers may be profitably employed. Greater efficiency in operations as well as the expansion of industrial activities in the State will maintain the need for graduates in this ever-developing field.

FIRST YEAR INDUSTRIAL ENGINEERING

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Chem. 1—Inorganic Chem.	4	Chem. 2—Inorganic Chem.	4
English 1—Comp. & Rhet.	3	English 2—Comp. and Rhet.	3
G. 1—Engineering Lectures	Cr.	Math. 116—Calculus	4
M.E. 20—Eng'g. Draw. and Graphics	3	Physics 11—General Physics	4
Math. 15—Calculus	4	Mil. Sci. 2 or Air Sci. 2	2
Mil. Sci. 1 or Air Sci. 1	2	Phys. Ed. 2—General Program	1
Phys. Ed. 1—General Program	1		
	17		18

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Econ. 51—Principles	3	Econ. 52—Principles	3
Humanities 1	3	Humanities 2	3
Math. 117—Calculus	4	Math. 253—Adv. Math.	3
Physics 102—General Physics	4	Physics 124—Modern Physics	4
T.A.M. 101—Statics	3	T.A.M. 104—Dynamics	3
Mil. Sci. 3 or Air Sci. 3	2	Mil. Sci. 4 or Air Sci. 4	2
	19		18

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
E.E. 105—Electrical Fund.	4	E.E. 205—Electrical Fund.	4
I.E. 100—Mfg. Processes	3	I.E. 110—Tool Design	3
I.E. 140—Motion & Time Study	3	I.E. 131—Fund. of I.E.	2
I.E. 281—Digital Comp. for Eng'g.	3	I.E. 151—Acct. for Engr's.	3
I.E. 244—Eng'g. Statistics	3	I.E. 214—Adv. Anal. Eng'g. Data	3
T.A.M. 102—Mech. of Materials I	3	M.E. 121—Thermodynamics	3
	19		18

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
C.E. 115—Fluid Mechanics	3	I.E. 294—Std. Mfg. Costs	3
I.E. 142—Prod. Control	3	Pol. Sci. 101—Intro. to Gov't.	3
I.E. 254—Intro. Oper. Research	3	°Speech 11—Public Speaking	3
I.E. 287—Eng'g. Economy	3	°°Electives—I.E. Technical	6
I.E. 290—Ind. Stat.	2	°°°Elective—Non-Technical	3
Mat.E. 250—Mat. Sci. Eng'g.	3		
	17		18

°Either Speech 11 or English 126 may be taken.

°°Elective (I.E. Technical) must be taken from any of the Industrial Engineering courses listed in the Courses of Instruction.

°°°Elective (Non-Technical) may be selected from psychology, philosophy, economics, or sociology.

A student wishing to specialize in Operations Research should take 6 hours of I.E. Technical Electives from the following list of courses: I.E. 215, I.E. 253, and Math. 242.

CURRICULUM IN MECHANICAL ENGINEERING

Degree: Bachelor of Science in Mechanical Engineering

Mechanical engineers, who work in a wide variety of industries, make vital contributions to power generation, transportation, manufacturing, nuclear-energy developments, space exploration and other activities. For example, many of the engineers in the satellite and space programs are mechanical engineers working on re-entry problems, nose cones, rocket motors, guidance systems, and other associated problems.

Large numbers of mechanical engineers are employed in the following industries: electrical power, electronics, automotive, chemical, petroleum production and refining, and many others.

The above list of industries could be extended to include virtually every industry; thus it is extremely important that mechanical engineering students are trained to deal effectively with general engineering problems. Adequate courses in the humanities, social consciousness, and communications are provided throughout the four years, to insure the development of a well-rounded individual who is capable of assuming a responsible position in society.

A basic engineering graphics course provides contact with engineering work during the first year and are given so as to thoroughly familiarize the student with graphical communication. Theoretical and laboratory instruction are provided to give a fundamental knowledge of machine tools and production methods.

Courses in mechanisms, statics, mechanics of materials, kinetics, dynamics, machine design, thermodynamics, and other technical courses provide an opportunity to apply the basic sciences of mathematics, physics, and chemistry. A sufficient amount of electrical engineering is given in the third and fourth years to enable the student to handle engineering operations involving electrical problems. The course in thermodynamics provides a fundamental background in heat power.

Well-equipped laboratories are provided to supplement classroom instruction and to furnish a means of teaching experimental methods. The student is provided with the opportunity to observe phenomena and seek explanations, to test theories, to note contradictions, and interpret results. An opportunity is also provided for the student to become familiar with the test codes of recognized national societies.

The curriculum is highly technical, yet sufficiently broad to meet the requirements of industry and society. The young graduate ordinarily enters a manufacturing or operating organization, where opportunity is provided for his development in research, design, operation, sales, or administration, depending upon his interests and his aptitudes.

A student who desires a broader training in the liberal arts than is provided in the regular four-year curriculum may take a combined bachelor of science and mechanical engineering course. By a careful selection of electives and proper sequence of registration, both degrees may be earned in five years.

FIRST YEAR MECHANICAL ENGINEERING

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Math. 15—Calculus	4	Math. 116—Calculus	4
Chem. 1—General Chem.	4	Chem. 2—General Chem.	4
English 1—Comp. and Rhet.	3	English 2—Comp. and Rhet.	3
M.E. 20—Graphics	3	Physics 11—General Physics	4
Phys. Ed. 1—General Program	1	Phys. Ed. 2—General Program	1
Mil. Sci. 1 or Air Sci. 1	2	Mil. Sci. 2 or Air Sci. 2	2
	17		18

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Math. 117—Calculus	4	Math. 253—Adv. Math.	3
Physics 102—General Physics	4	Humanities 2	3
T.A.M. 101—Statics	3	T.A.M. 102—Mech. of Materials I	3
Humanities 1	3	T.A.M. 104—Dynamics	3
Mil. Sci. 3 or Air Sci. 3	2	Physics 124—Intro. to Mod. Physics	4
		Mil. Sci. 4 or Air Sci. 4	2
	16		18

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
T.A.M. 103—Mech. of Materials II	3	E.E. 205—Electrical Fund.	4
I.E. 100—Mfg. Processes	3	C.E. 115—Fluid Mechanics	3
E.E. 105—Electrical Fund.	4	M.E. 112—Dynamics of Mach.	3
M.E. 109—Mechanisms	2	M.E. 125—Thermodynamics	3
M.E. 120—Thermodynamics	3	M.E. 126—Graphics II	2
English 126—Technical Writing *OR*		M.E. 132—Mech. Lab.	2
Speech 11—Public Speaking	3		
	18		17

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
M.E. 201—Design of Mach. Members	3	M.E. 203—Machine Design	3
M.E. 228—Mech. Lab.	1	I.E. 244—Statistics *OR*	
M.E. 230—Heat Transmission	3	I.E. 287—Eng'g. Economy	3
Mat.E. 250—Materials Science	3	Technical electives	6
Technical elective	3	Non-technical electives	6
Non-technical electives	6		
	19		18

NOTE: Six hours of technical electives must be taken from Mechanical Engineering courses. The 12 hours of non-technical electives must be selected to meet University Core Curriculum requirements.

GRADUATE WORK

For information on graduate programs in the following areas, see the 1965-66 Graduate School *Announcements*.

AEROSPACE ENGINEERING
AGRICULTURAL ENGINEERING
AIR POLLUTION CONTROL
CHEMICAL ENGINEERING
CIVIL ENGINEERING

ELECTRICAL ENGINEERING
HIGHWAY ENGINEERING
HIGHWAY TRAFFIC AND PLANNING
INDUSTRIAL ENGINEERING
MATERIALS SCIENCE ENGINEERING
MECHANICAL ENGINEERING
NUCLEAR ENGINEERING
SANITARY ENGINEERING
SOIL MECHANICS
STRUCTURAL ENGINEERING
THEORETICAL AND APPLIED MECHANICS

The School of Mines

CURRICULA IN THE SCHOOL OF MINES

The following engineering curricula are offered in the School of Mines.

1. A four-year curriculum leading to the degree Bachelor of Science in Engineering of Mines.

2. A four-year curriculum leading to the degree Bachelor of Science in Petroleum Engineering.

3. A combined science and engineering curricula leading to the degree of Bachelor of Science and Bachelor of Science in Engineering of Mines or Bachelor of Science in Petroleum Engineering.

In the four-year curricula the first two years of instruction are alike. During this period the student is given a thorough grounding in mathematics, physics, chemistry, English composition, and geology, as well as an introduction to history and economics. During the third and fourth years the student is given instruction in the engineering sciences as well as in the professional subjects pertaining to mining engineering and petroleum and natural gas engineering. Also, studies in the humanities are continued with the student being permitted to elect a reasonable proportion of the subjects to be studied.

CURRICULUM IN ENGINEERING OF MINES

Degree: Bachelor of Science in Engineering of Mines

Mining Engineering deals with discovering, extracting, beneficiating, marketing, and utilizing minerals from the earth. The role of the mining engineer is quite diversified and there are opportunities for technical specialization in prospecting, development, production, beneficiation, utilization, and marketing. Therefore, the mining engineer must be well trained in the fields of mining and geology and also in the principles of civil, electrical, and mechanical engineering as applied to the mining industry. With the present trend toward the use of engineers in industrial management and administrative positions, the mining engineer's training must also include economics, business, personnel management, and the various humanities.

In this curriculum professional study includes geology and the engineering principles of blasting, materials handling, transportation, hoisting, water control, surface and underground systems of mining, roof control, ventilation, mineral preparation, and plant design. Special consideration is given to the application of mining machinery with particular attention to power transmission and electric and hydraulic control systems.

Special courses in the design of surface and underground mining installations give the student opportunity for using the engineering principles developed in preceding phases of the course as well as for specialization. The student receives an introduction to the management and social aspects through courses devoted to economic, social, governmental, labor, financial, and safety problems incident to the operation of a mining enterprise.

In the fourth year the student may specialize in coal mining, ore mining, or other phases of mining engineering by proper selection of design problems and electives. He will be assigned an adviser who will assist him in this phase of the program.

Local coal fields, mines, and preparation plants are used extensively for experimental, instructional, and field work.

FIRST YEAR ENGINEERING OF MINES

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Chem. 1—Inorganic Chem.	4	Chem. 2—Inorganic Chem.	4
English 1—Comp. and Rhet.	3	English 2—Comp. and Rhet.	3
E.M. 1—Freshman Orientation	0	Math. 116—Calculus	4
Math. 15—Calculus	4	Geol. 1—Physical Geology	3
Hist. 1—World Civilization	3	Mil. Sci. 2 or Air Sci. 2	2
Mil. Sci. 1 or Air Sci. 1	2	Phys. Ed. 2—General Program	1
Phys. Ed. 1—General Program	1		
	17		
*Math. 14—Introductory Math.	2		
	19		17

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Physics 11—General Physics	4	Physics 102—General Physics	4
Math. 117—Calculus	4	Math. 253—Adv. Appl. Math.	3
Hist. 2—World Civilization	3	T.A.M. 101—Statics	3
E.M. 106—Mineralogy	2	Econ. 52—Principles	3
Econ. 51—Principles	3	Chem. 163—Physical Chemistry	4
Mil. Sci. 3 or Air Sci. 3	2	Mil. Sci. 4 or Air Sci. 4	2
	18		19

SUMMER

E.M. 102—Mine Surveying (5 weeks) 5

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Geol. 151—Structural Geology	3	E.M. 209—Mineral Prep.	3
Physics 124—Intro. to Mod. Physics	4	E.E. 105—Electrical Fund.	4
English 127—Intro. to Lit.	3	English 128—Intro. to Lit.	3
C.E. 115—Fluid Mechanics	3	T.A.M. 102—Strength of Materials	3
T.A.M. 104—Dynamics	3	M.E. 121—Thermo. of Eng'g.	3
E.M. 108—Fund. of Mining	4	**Non-technical elective	3
	20		19

*Only if necessary for entrance to Math. 15.

**Non-technical electives must be selected from the following fields: Art, Classics, English and American Literature, Humanities, Music, Philosophy, Economics, History, Psychology, Political Science, Sociology.

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
I.E. 244—Eng'g. Statistics	3	E.M. 220—Mine Design	3
E.E. 205—Electrical Fund.	4	E.M. 222—Mine Equip. and Mach.	3
E.M. 212—Advanced Mining	3	E.M. 223—Mine Management	3
E.M. 213—Mine Ventilation	3	Mat.E. 250—Elements, Mat. Sci. Eng'g.	3
E.M. 241—Mechanics of Ground Control in Mines	3	G. 100—Inspection Trip	0
°°°Technical elective	3	Technical elective	3
		°°Non-technical elective	3
	19		18

°°°Students wishing to specialize in coal mining may do so by electing E.M. 217, Coal Preparation, and selecting a coal mining design problem in E.M. 220, Mine Design.

Students wishing to specialize in ore mining may do so by electing E.M. 218, Advanced Mineral Preparation, and electing an ore mining design problem in E.M. 220, Mine Design.

RECOMMENDED TECHNICAL ELECTIVES

E.M. 112—Mine Plant Design	3	E.M. 230—Elements of Geop. Prosp.	3 or 4
E.M. 215—Indus. Safety Engr.	2	E.M. 234—Applied Geophysics	3
E.M. 217—Coal Preparation	3	I.E. 140—Motion & Time Study	3
E.M. 218—Adv. Mineral Prep.	3	T.A.M. 103—Mech. of Materials	3
E.M. 219—Adv. Mining Method for Vein Deposits	3	Econ. 115—Labor Problems	3
E.M. 224—Mining Eng'g. Problems	1 to 3	Geol. 275—Coal Geology	4
E.M. 228—Mine Equip. & Machine Controls	3	Manag. 217—Personnel Management	3
E.M. 229—Adv. Mine Equip. Appl.	3	M.E. 230—Heat Transfer	3

CURRICULUM IN PETROLEUM ENGINEERING

Degree: Bachelor of Science in Petroleum Engineering

Petroleum engineering deals with the discovery, production and transportation of oil and natural gas. Consequently, the petroleum engineer must be soundly grounded in the principles of geology as related to the occurrence, discovery, and production of natural gas and petroleum. In this curriculum this training is obtained by the study of geology as well as by the geological principles developed in the courses relating to oil field development and production. In addition, the petroleum engineer must be well grounded in the principles of oil and gas production as well as in the technology of transportation. This training may be obtained in the several courses pertaining to petroleum technology and in natural gas engineering and distribution as well as the courses given in the engineering and basic sciences and mathematics. Today, there is a strong trend towards employing the petroleum engineer as supervisors, managers, and executives. Education for this aspect of his career is provided by the courses in property evaluation, oil and gas law, as well as in economics and the humanities. In the senior year electives are provided by use of which the student may obtain additional training in geology or geophysics or in management of supervisory skills or in some special phase of petroleum and natural gas technology. Assistance in this phase of the program will be given by an adviser assigned to the student for this purpose.

The School is particularly fortunate in that West Virginia is a petroleum and natural gas producing state and as a result local production and gas storage fields, secondary recovery projects, compressor stations and refineries provide excellent opportunity for field study of petroleum engineering problems, techniques, and methods. The petroleum laboratories of the School are well equipped for laboratory study of gas measurement apparatus, for core analysis as well as for the study of drilling muds and for study of and experiments on drilling and pumping machinery.

FIRST YEAR PETROLEUM ENGINEERING

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Chem. 1—Inorganic Chem.	4	Chem. 2—Inorganic Chem.	4
English 1—Comp. and Rhet.	3	English 2—Comp. and Rhet.	3
E.M. 1—Freshman Orientation	0	Math. 116—Calculus	4
Math. 15—Calculus	4	Geol. 1—Physical Geology	3
Hist. 1—World Civilization	3	Mil. Sci. 2 or Air Sci. 2	2
Mil. Sci. 1 or Air Sci. 1	2	Phys. Ed. 2—General Program	1
Phys. Ed. 1—General Program	1		
	17		
*Math. 14—Introductory Math.	2		
	19		17

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Physics 11—General Physics	4	Physics 102—General Physics	4
Math. 117—Calculus	4	Math. 253—Adv. Appl. Math.	3
Hist. 2—World Civilization	3	T.A.M. 101—Statics	3
E.M. 106—Mineralogy	2	Chem. 163—Physical Chemistry	4
Econ. 51—Principles	3	Econ. 52—Principles	3
Mil. Sci. 3 or Air Sci. 3	2	Mil. Sci. 4 or Air Sci. 4	2
	18		19

SUMMER

E.M. 102—Mine Surveying (5 weeks) 5

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
T.A.M. 104—Dynamics	3	E.E. 105—Electrical Fundamentals	4
Physics 124—Modern Physics	4	English 128—Intro. to Literature	3
English 127—Intro. to Literature	3	T.A.M. 102—Mech. of Materials	3
Pet.E. 106—Oil & Gas Field Div. and Production	4	M.E. 121—Thermodynamics	3
C.E. 115—Fluid Mechanics	3	Geol. 272—Petrol. Geology	3
Geol. 151—Structural Geology	3	Pet.E. 236—Mech. of Hydrocarbon Fluids	3
	20		19

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Mat.E. 250—Element of Mat. Sci. Eng'g.	3	Pet.E. 237—Comp. & Prop. of Oil Well Drilling Fluids	2
I.E. 244—Engineering Statistics	3	Pet.E. 216—Pet. Engr. Design	3
E.E. 205—Electrical Fund.	4	Pet.E. 235—Fund. of Well Logging	3
Pet.E. 232—Pet. Reservoir Eng'g.	5	G-100—Inspection Trip	0
Pet.E. 206—Natural Gas Eng'g.	3	Technical Electives	5
		**Non-technical electives	6
	18		19

*Only if necessary for entrance to Math. 15.

**Non-technical electives must be selected from the following fields: Art, Classics, English and American Literature, Humanities, Music, Philosophy, Economics, History, Psychology, Political Science, and Sociology.

RECOMMENDED TECHNICAL ELECTIVES

E.M. 207—Introductory Seismology	1	Pet.E. 240—Sec. Recovery of Oil by Water Flooding	3
E.M. 214—Mine Val., Cost Control and Economics	3	T.A.M. 103—Mech. of Materials	3
E.M. 215—Ind. Safety Eng'g.	2	Geol. 2—Phys. Geol. Lab.	1
E.M. 230—Elem. of Geop. Prosp.	3 or 4	Geol. 161—Field Geology	3
E.M. 234—Applied Geophysics	3	Geol. 170—Nat. Res. & Geol. of West Virginia	2 or 3
Pet.E. 203—Petrol. Prop. Val.	2	M.E. 230—Heat Transfer	3
Pet.E. 238—Oil & Gas Law	2		

FIVE-YEAR CURRICULA

Degree: Bachelor of Science in conjunction with a degree in engineering.

These curricula are designed to meet the needs of students who wish to receive a broader training than is provided in the four-year program. They also enable the student to take lighter schedules than are required in the four-year curricula.

(A) Requirements for the degree of Bachelor of Science, to be conferred at the end of the fourth year, where the student's grade-point average is 2.5 or over, or at the time of the conferring of the engineering degree where the grade-point average is below 2.5.

(1) The requirements of the first three years of any four-year engineering curriculum.

(2) a. Twelve semester hours of one foreign language, where no secondary school entrance credits have been allowed, or
b. Six smester hours at intermediate level, where two units of entrance credits have been allowed in the same foreign language.

(3) Electives from the following groups, amounting to six semester hours where (2a) applies and twelve semester hours where (2b) applies.
a. Not more than three hours each of English, history, and speech.
b. Not more than six hours each in any one or more than the following groups: foreign language (other than specified above); journalism; commerce, political science; and philosophy, psychology, and sociology.

(B) Requirements for the Bachelor of Science degree in engineering or mining or petroleum engineering, to be conferred on completion of the work of the fifth year.

SPECIAL ENGINEERING CURRICULA

1. *Elective Groups for Students in Other Colleges.* Candidates for degrees other than engineering degrees, and special students in any department of the University, are permitted to elect subjects in the College of Engineering and the School of Mines, provided, in each case, they have had the subjects specified as prerequisites. Students who wish to take a general classical or scientific course of study before taking the engineering curriculum are advised to carry their mathematics as far as called for by the engineering curriculum, and to take some elective work in the College of Engineering or the School of Mines.

2. *Partial Curriculum.* Students who have not the time or are otherwise unable to take the full curriculum will be allowed to take a special or partial curriculum, consisting of such studies as they are prepared to take, provided such curriculum shall have been approved by the adviser. For information as to requirements for admission of special students, see page 34.

PROFESSIONAL DEGREES

The University confers the following professional degrees: Aerospace Engineer (A.E.), Chemical Engineer (Ch.E.), Civil Engineer (C.E.), Electrical Engineer (E.E.), Mechanical Engineer (M.E.), Engineer of Mines (E.M.), and Petroleum Engineer (Pet.E.).

The professional degree is conferred upon graduates of the College of Engineering and of the School of Mines of West Virginia University on the basis of practical

experience and study in absentia, the presentation of a thesis, and oral final examination.

To be eligible, a candidate for a professional degree must have been in active practice of his profession for at least five years since receiving his first degree, and must have been in responsible charge of important work at least two years.

Application for registration as a candidate for a professional degree should be made not later than October 1 in the academic year in which the degree is desired. Detailed regulations and registration blanks may be obtained from the Dean of the College of Engineering or from the Dean of the School of Mines.

Courses in the College of Engineering*

AEROSPACE ENGINEERING

A.E.

116. Introduction to Flight Vehicles. 3 hr. PR: M.E. 20, Physics 102, and/or conc: Math. 253. Discussion of flight vehicles of the past, present, and future. Introduction to the methods of graphical communication, production, and fabrication used in the aerospace industry. Solution of aerospace problems by graphical, digital, and analog methods. 2 hr. lec., 3 hr. lab.

201. Fluid Dynamics I. 4 hr. PR: Math. 253; or conc: M.E. 120, A.E. 116. Properties of the fluid medium, dimensional analysis, hydrostatics, kinematics and dynamics of a fluid field, perfect fluid flow about a body, complex potential function, conformal transformation, thin airfoil theory, finite wing theory. 4 hr. lec.

202. Fluid Dynamics III. 3 hr. PR: Math. 253, A.E. 201. Steady flow of incompressible and compressible fluids. Stream functions and potential theory of two dimensional ideal flows. Flow equations in vector notation. Conformal transformations and airfoil development. Viscous and three dimensional effects on ideal flows. Two and three dimensional vortex flows. 3 hr. lec.

203. Applied Aerodynamics. 3 hr. PR: A.E. 209. Chordwise and spanwise airload distribution for plain wings, wings with aerodynamic and geometric twist, wings with deflected flaps, and wings with ailerons deflected. Section induced drag characteristics. 3 hr. lec.

205. Experimental Fluid Dynamics. 2 hr. PR: A.E. 223. Subsonic and supersonic wind tunnel testing methods and practice. Experiments include the following measurements: pressure distribution on bodies, boundary layer determination, turbulence measurements, force tests, and stability and performance determinations. Corrections for scale and jet boundary effects. Data collection. Data reduction by digital computer. Test design, data analysis, and engineering report preparation. 1 hr. lec., 3 hr. lab.

207. Flight Vehicle Design. 3 hr. PR: A.E. 209. Preliminary design of flight vehicles. Vehicles are designed with regard for performance and stability requirements, considering aerodynamics, weight and balance, structural arrangement, configuration, guidance, and propulsive effects. Layout drawings and calculations are combined in a preliminary design report. 1 hr. lec., 6 hr. lab.

208. Flight Testing. 2 hr. PR: A.E. 209. Flight test theory and practice. Stability and performance determination based on flight test of Cessna 182 airplane. Flight test data reduction practice. 1 hr. lec., 3 hr. lab.

209. Flight Mechanics. 3 hr. PR: A.E. 201. Performance estimation with emphasis on fixed wing aircraft. Fundamental concepts of stability and control of aircraft. 3 hr. lec.

*Courses marked with an asterisk may be taken as undergraduate work by students in other colleges and schools.

210. Flight Vehicle Structures I. 3 hr. PR: T.A.M. 103. Design of elementary structural forms, load factors, truss analysis, and introduction to use of thin sheet in aerospace vehicles. 3 hr. lec.

211. Flight Vehicle Structures II. 3 hr. PR: A.E. 210 or equiv. Continuation of A.E. 210. Deflections of structures. Analysis and design of statically indeterminate structures used in flight vehicles. Emphasis on achieving high strength/weight ratios. 3 hr. lec.

212. Design of Flight Structures I. 3 hr. PR: A.E. 207, 211. Structural design and analysis of flight vehicle members. Layout and detail design of specified components are required. 1 hr. lec., 6 hr. lab.

213. Experimental Flight Vehicle Structures. 1 hr. PR: A.E. 211. Strength tests of flight vehicle materials, static test of components, bending and torsion of shell structures, compression tests of thin-walled structures. 3 hr. lab.

217. Design of Flight Structures II. 3 hr. PR: T.A.M. 103. Analysis and detail design of simple fittings, beams, welded structures, forgings, castings. Methods of production and fabrication. 1 hr. lec., 6 hr. lab.

218. Aeroelasticity. 3 hr. PR: A.E. 210. The study of vibrating systems of single degree and multiple degrees of freedom, flutter theory and modes of vibration, torsional divergence and control reversal. 3 hr. lec.

219. Introduction to Research. 1-3 hr. PR: Senior standing and consent. An introduction to the methods of organizing theoretical and experimental research. Formulation of problems, project planning, and research proposal preparation.

220. Research Problems. 2-6 hr. PR: A.E. 219. Performance of the research project as proposed in A.E. 219. Project results are given in written technical reports, with conclusions and recommendations.

223. Fluid Dynamics II. 3 hr. PR: A.E. 201, M.E. 120. Introduction to compressible, nonviscous fluids, isentropic flow, Prandtl-Meyer expansion, shock waves, airfoils in compressible flow, small perturbation theory, viscous incompressible flow, boundary layer, exact and integral solutions, introduction to turbulence. 3 hr. lec.

224. Flight Vehicle Propulsion. 3 hr. PR: A.E. 223. Application of thermodynamics and gas dynamics to combustion. Turbine cycles with emphasis on turboprop and turbojet propulsion. Ramjets. Rocket propulsion by chemical, nuclear and electrical systems. Propulsion of staged vehicles. 3 hr. lec.

225. Guided Missile Systems. 3 hr. PR: A.E. 223, and/or conc: A.E. 224. Design philosophy according to mission requirements. Preliminary configuration and design concepts. Aerodynamic effects on missiles during launch and flight. Ballistic missile trajectories. Stability determination by analog simulation. Performance determination by digital and analog simulation. Control, guidance, and propulsion systems. Operational and reliability considerations. 3 hr. lec.

226. Fluid Dynamics IV. 3 hr. PR: A.E. 223. Shock tube theory and applications. Introduction to kinetic theory, the calculation of viscosity and thermal conductivity. Fundamentals of hypersonic flow and the determination of minimum drag bodies. 3 hr. lec.

*258. Space Mechanics. 3 hr. PR: Math. 253, T.A.M. 104. An introduction of flight in and beyond the earth's atmosphere by space vehicles. The laws of Kepler and Orbital theory. Energy requirements for satellite and interplanetary travel. Exit from and entry into an atmosphere. 3 hr. rec.

280. Aerospace Problems. 1-3 hr. Upper division and graduate.

299. Thesis. 2-6 hr. PR: Senior standing and permission.

AVIATION

NOTE: A.E. 171 and 172, or A.E. 172 and 173, or A.E. 171, 172, and 173, may be taken concurrently by consent.

*170. Aviation Ground School. 0-2 hr. Nomenclature of aircraft, civil air regulations, navigation, meteorology, aircraft and aircraft engines. This course serves as preparation for the private pilot written examination.

*171. Flight Training. 0-1 hr. PR or conc: A.E. 170. Primary flight instruction. First course in a sequence leading toward an F.A.A. private pilot certificate. Twenty hours of flight training in Cessna airplanes. Special flight fee $100, payable at registration.

*172. Flight Training. 0-1 hr. Continuation of A.E. 171. Twenty hours of flight training. Special flight fee $100, payable at registration.

*173. Flight Training. 0-1 hr. Continuation of A.E. 172. Twenty hours of flight training. Special flight fee $100, payable at registration.

*181. Advanced Flight Training. 0-1 hr. Advanced flight instruction with emphasis on cross-country, night and instrument flying. Twenty hours of flight training. Special flight fee $100, payable at registration.

*182. Advanced Flight Training. 0-2 hr. Advanced flight instruction with emphasis on cross-country, night and instrument flying. Forty hours of flight training. Special flight fee $200, payable at registration.

AGRICULTURAL ENGINEERING

Ag.E.

10. Principles of Agricultural Engineering. 3 hr. PR: Math. 4. Introduction to several fields of agricultural engineering and how they are applied in agriculture and industry. 3 hr. rec.

180, 181. Assigned Topics. 1-3 hr. per sem.

190. Farm Machinery. 3 hr. PR: M.E. 201. Construction, operation, adjustment, and testing of farm machines. 2 hr. rec., 3 hr. lab.

200. Seminar. 1 hr. PR: Senior standing.

201. Agricultural Structures. 3 hr. PR: T.A.M. 102. Structural design and functional requirements of agricultural buildings. 2 hr. rec., 3 hr. lab.

210. Application of Electricity to Agriculture. 3 hr. PR: E.E. 106. Economic application of electric light, heat, and power. 2 hr. rec., 3 hr. lab.

220. Agricultural Process Engineering. 3 hr. PR: C.E. 115, M.E. 121. Application of the fundamentals of engineering to agricultural engineering processes. 2 hr. rec., 1 hr. lab.

230. Farm Power. 4 hr. PR: M.E. 121. Fundamental theories underlying design and operation of internal combustion engines used in agriculture. 3 hr. rec., 3 hr. lab.

240. Hydrology. 3 hr. PR: C.E. 115. The study of a hydrologic cycle with emphasis on precipitation and runoff as related to design of hydraulic structures, soil and water conservation, and flood control. 3 hr. rec.

*Courses marked with an asterisk may be taken as undergraduate work by students in other colleges and schools.

241. Physical Climatology. 3 hr. PR: Consent. Physical principles underlying the variations and changes in climate; climatic controls; elements of microclimatology; engineering applications and uses of climatic data. 3 hr. rec.

250. Soil and Water Conservation. 3 hr. PR: C.E. 115. Engineering principles and practices in conservation, utilization, and management of soil and water resources. 2 hr. rec., 3 hr. lab.

290. Elements of Machinery Design. 3 hr. PR: M.E. 201. Design requirements for construction, principles of operation and adequate adjustment of agricultural machines and principles of testing agricultural equipment. 2 hr. rec., 3 hr. lab.

CHEMICAL ENGINEERING

Ch.E.

201. Chemical Engineering Fundamentals. 3 hr. PR: T.A.M. 101, T.A.M. 104, Math. 253. Review of vector and tensor algebra; viscosity; method of shell balances; equations of continuity, motion, and energy; Navier-Stokes equation; turbulent flow; flow through porous media; microscopic momentum balances; boundary layer; heat conduction in solids; convective heat transfer; boiling and condensation; radiation; diffusion of mass; film and penetration theory; analogies among heat, mass, and momentum transfer. 3 hr. rec.

202. Chemical Engineering Fundamentals. 3 hr. Continuation of Ch.E. 201. 3 hr. rec.

206. Chemical Engineering Operations. 3 hr. PR or conc: Ch.E. 202 and Math. 253. Application of fundamental theory to the design, performance, and operation of chemical process equipment. 1 hr. rec., 6 hr. computation lab.

208. Chemical Engineering Operations. 3 hr. PR: Ch.E. 206. Continuation of Ch.E. 206. 1 hr. rec., 6 hr. computation lab.

210. Process Engineering. 3 hr. PR: Ch.E. 208. Process equipment calculations for unsteady state. Determination of maximum and minimum process conditions. Economics of processing methods. 3 hr. rec.

211, 212. Chemical Engineering Laboratory. 2 hr. PR: Ch.E. 207. Experimental work in the unit operations; practice in writing engineering reports. 6 hr. lab.

224. Process Development. 3 hr. PR: Chem. 238 and 261, Ch.E. 202, 206, and 243. Development of process systems from the unit operations-unit process concept. Use of thermodynamics and kinetics in the evaluation of system requirements and performance. 3 hr. rec.

242. Chemical Engineering Thermodynamics and Kinetics. 3 hr. PR: Chem. 261. Material and energy balances; internal energy levels; statistical distributions and statistical evaluation of thermodynamic functions; empirical evaluation of thermodynamic functions; second law of thermodynamics; thermodynamic properties of solutions and solid phases; chemical and physical equilibria. Kinetics of simple and complex chemical reactions; development of rate equations. Kinetics of vapor phase-catalytic reactions; development of rate equations and mechanisms of reactions; backmixing. 3 hr. rec.

243. Chemical Engineering Thermodynamics and Kinetics. 3 hr. Continuation of Ch.E. 242. 3 hr. rec.

*248. Statistical Design of Experiments. 2 hr. PR: Math. 253 or consent. Development of the principles of factorial design based on selected observations. Other design procedures such as confounding, composite design and evolu-

*Courses marked with an asterisk may be taken as undergraduate work by students in other colleges and schools.

tionary operations, with applications to chemical engineering and related fields. Evaluation of the factors affecting systems, development of factor interrelations and the nature of interactions. Determination of optimum conditions. Computing technics. 2 hr. rec.

272. Chemical Engineering Design. 3 hr. PR: Ch.E. 207, T.A.M. 102. Design of process equipment from economic, chemical and engineering considerations. Study of plant location and layout. 2 hr. rec., 3 hr. lab.

273. Chemical Engineering Design. 3 hr. Continuation of Ch.E. 272. 2 hr. rec., 3 hr. lab.

280. Chemical Engineering Problems. 1-6 hr. For junior, senior, and graduate students.

283. Process Dynamics. 3 hr. PR: Math. 253, Ch.E. 207. Introduction to automatic control and control loop concepts, measurement of variables, dynamic properties of instruments, process response, discussion of controller types, derivation of equations for first and second order control systems, derivation of equations for first and second order process, transient analysis of process and control systems, use of analog computer for process simulation and solution of differential equations. 3 hr. rec.

284. Industrial Instrumentation and Control. 3 hr. PR: Math. 108. Discussion of process characteristics, theory and application of measuring means. Theory, modes and application of automatic control. Selection and characteristics of final control elements. 3 hr. rec.

297. Thesis. 2-5 hr. A problem in chemical engineering or industrial chemistry is selected for investigation. A carefully prepared report is required. Open only to qualified seniors. 6-15 hr. lab.

Materials Science Engineering

Mat.E.

*250. Engineering Materials Science. 3 hr. PR: Physics 124 or 125. Includes a study of the internal structures of metals, ceramics, and organic materials and the dependence of properties upon these structures. Also the behavior of materials under conditions involving mechanical stresses, thermal reactions, corrosion, electromagnetic fields and radiation. 3 hr. rec.

*254. Principles of Metallurgical Engineering. 3 hr. PR: Physics 112. Includes the theory and physical principles involved in the production of metals from their ores. 3 hr. rec.

*255. Synthetic Materials. 3 hr. PR: Physics 112. Properties, uses and methods of production of synthetic materials such as plastics, elastomers, laminates, lubricants and miscellaneous materials of construction. 3 hr. rec.

*260. Physical Ceramics. 3 hr. PR: Physics 124 or 125. The electronic and crystalline structure of ceramic materials; thermodynamics and kinetics of ceramic systems; the mechanical, chemical, electrical, thermal, and optical properties of ceramic materials and the factors affecting them; processing and utilization of ceramic materials. 3 hr. rec.

*261. Principles of Ceramic Engineering. 3 hr. PR: Mat.E. 260. Identification of the factors affecting the properties of ceramic systems through application of factorial design; the development of empirical equations showing the relationships between the factors; development of optimum conditions. 3 hr. rec.

*Courses marked with an asterisk may be taken as undergraduate work by students in other colleges and schools.

*265. Materials Science Laboratory. 2 hr. PR: Mat.E. 250, 255, 260. Preparation and pretreatment of engineering materials for photomicrography and physical inspection. 6 hr. lab.

*269. X-Ray Diffraction. 2 hr. The theory of X-ray diffraction and application to the analysis of crystalline materials, using the powder camera and X-ray diffractometer. Open to students in geology, chemistry, engineering, and related fields with permission of the instructor. 1 hr. rec., 3 hr. lab.

Nuclear Engineering

Nuc.E.

290. Introductory Nuclear Engineering. 3 hr. PR: Physics 112. Includes elementary nuclear physics necessary for understanding nuclear engineering. Design and operation of nuclear reactors, shielding, instrumentation, health physics, fuel cycles, uses of radioactive isotopes, nuclear propulsion. 3 hr. rec.

CIVIL ENGINEERING

C.E.

*1. Surveying. 2 hr. PR: Math. 4. For non-civil engineering students. Elementary theory of measurement of distance, direction, and difference in elevation. Field work with transit, tape, level, stadia, and plane table. Office computation and plotting. 1 hr. rec., 3 hr. lab.

*5. Land Surveying. 4 hr. PR: Math. 4. Primarily for forestry students. Theory and practice with compass, transit, level, stadia, and plane table; computations of area; astronomical observations; map plotting. 2 hr. rec., 6 hr. lab.

*6. Topographic Mapping. 2 hr. PR: C.E. 5. Primarily for forestry students. Topographic maps; surveys for roads and property lines; U. S. Public Land Surveys; practice in lettering, plotting, and inking of topographic maps. 1 hr. rec., 3 hr. lab.

100. Introduction to Civil Engineering. 1 hr. PR: Freshman standing. A survey of the historical foundations of civil engineering and the role of the profession in the future. The basic areas of civil engineering will be introduced and discussed to familiarize the student with the opportunities inherent in civil engineering careers. Introductory problems, lectures, and laboratory tours will be included. 2 hr. rec.

102. Survey Engineering. 6 hr. PR: Math. 15. Theory of measurement and errors; introduction to least squares; figures of the earth; study of instruments for measuring distance, direction, and elevation including their geometry, accuracy, use, and adjustment; terrestrial and celestial spheres and field astronomy; horizontal and vertical curves; earthwork measurement; triangulation; boundary surveying. The design, execution and testing of field surveys for maps, boundaries and routes; determination of true meridian, calculation of areas.

*115. Fluid Mechanics. 3 hr. PR or conc: T.A.M. 104. Fluid statics, laminar and turbulent flow of compressible and incompressible fluids, flow measurements, open channel flow, and kinetics of fluids. 3 hr. rec.

*116. Fluid Mechanics Laboratory. 1 hr. PR or conc: C.E. 115. Measurement of the properties and flow characteristics of gases and liquids. Hydraulic machinery. 3 hr. lab.

*Courses marked with an asterisk may be taken as undergraduate work by students in other colleges and schools.

131. Highway Engineering. 4 hr. PR: C.E. 102. Highway administration, economics, and finance; planning and design; subgrade soils and drainage; construction and maintenance. Design of a highway. Center line and grade projections, earthwork and cost estimate. 3 hr. rec., 3 hr. lab.

141. Railway Engineering. 3 hr. PR: C.E. 102. Development and importance of the railroad industry. Principles of location, construction, operation, and maintenance. 3 hr. rec.

146. Sanitary Engineering I. 3 hr. PR: C.E. 115. Hydrology as applied to water and waste water systems. Design of water distribution and waste water systems. The study and partial design of water and waste water treatment facilities. 2 hr. rec., 3 hr. lab.

147. Sanitary Engineering II. 3 hr. PR: C.E. 115. Examination of water and waste water, water treatment, waste water treatment and special problems in public health, air pollution and radioactivity. 2 hr. rec., 3 hr. lab.

160. Structural Analysis I. 5 hr. PR: T.A.M. 101 and 102. Analysis of stresses and deflections in statically determinate structures caused by fixed and moving loads. Study of influence lines and loading criteria for beams, and plane and space framed structures. Application of electronic computer techniques to structural problems. 4 hr. rec., 3 hr. lab.

*179. Engineering Materials. 2 hr. PR: T.A.M. 103. Properties and behavior of materials used in engineering. 2 hr. rec.

190. Contracts and Specifications. 2 hr. PR: Senior standing or consent. Elements of contracts; contracting procedures; contract documents; preparation of specifications; legal relations, rights, and responsibilities of engineers. 2 hr. rec.

210. Photogrammetry. 3 hr. PR: C.E. 102. Geometry and interpretation of the aerial photograph; flight planning; radial-line control; principles of stereoscopy; plotting instruments. 2 hr. rec., 3 hr. lab.

211. Geodesy. 3 hr. PR: C.E. 102 and Math. 116. Precise base line measurements, triangulation and leveling, geodetic astronomy; figure of the earth, map projections; rectangular coordinate systems; least squares adjustment; gravity. 3 hr. rec.

221. Engineering Hydraulics. 3 hr. PR: C.E. 115. Fundamental principles of flow, similitude, flow measurement, water hammer and surging, channel transitions, gradually varied flow, wave motion and sediment transportation. Design of various elements of hydraulic structures. 3 hr. rec.

231. Concrete and Aggregates. 3 hr. PR: C.E. 131, 179, T.A.M. 103. Considerations and methods for the design of concrete mixes. Effect of air entraining agents and other additives. Studies of the influence of aggregate properties on the design and performance of concrete mixtures. An analysis of the methods of test commonly used for concrete and aggregates and the significance of these tests. 3 hr. rec.

232. Principles of Transportation Engineering. 3 hr. PR: C.E. 131 or consent. A basic approach to the problem of integrated transportation systems from the standpoint of assembly, haul, and distribution means. Analysis of the characteristics of the transport equipment and traveled way. Power requirements, speed, stopping, capacity, costs, economics of location and route selection will be discussed. Future technological developments and innovations will be considered. 3 hr. rec.

251. Public Health Engineering. 3 hr. PR: C.E. 146 or 147 or consent. The engineering aspects involved in the control of the environment for the protection of the health and the promotion of the comfort of man. Discussions

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will include communicable disease control, milk and food sanitation, air pollution, refuse disposal, industrial hygiene, and radiological health hazards. 3 hr. rec.

252. Water Resources Engineering. 3 hr. PR: C.E. 115. Design of water-resource systems. The interrelationship between economic objectives, engineering analysis and governmental agencies. 3 hr. rec.

260. Structural Analysis II. 3 hr. PR: C.E. 160. An introduction to the fundamental theory of statically indeterminate structures. General theory of continuity and iterative and energy methods applied to the analysis of indeterminate beams and frames. 3 hr. rec.

261. Statically Indeterminate Structures. 3 hr. PR: C.E. 260. Advanced topics in indeterminate structural analysis for trusses and nonprismatic members. 3 hr. rec.

270. Structural Design I. 3 hr. PR or conc: C.E. 260. Theory and design of reinforced concrete members. Design considerations for concrete bridges and buildings. 2 hr. rec., 3 hr. lab.

271. Structural Design II. 3 hr. PR or conc: C.E. 260. Design of steel bridge and building structures. Welded, riveted, and bolted connections; simple and moment-resistant connections; cost estimates. 2 hr. rec., 3 hr. lab.

272. Plastic Design of Steel Structures. 3 hr. PR: C.E. 260 or consent. The fundamental concepts of the plasticity of steel. Analysis of structures for ultimate load. The influence of axial forces, shear forces, and local buckling on the plastic moment. Study of structural connections and deflections. Steel structure design. 3 hr. rec.

273. Prestressed Concrete. 3 hr. PR: C.E. 270. The analysis and design of determinate and indeterminate prestressed beams and frames. 3 hr. rec.

275. Reinforced Concrete. 3 hr. PR: C.E. 160. Theory and design of slabs, beams, columns, footings, retaining walls, and concrete buildings, with emphasis on ultimate load design. 2 hr. rec., 3 hr. lab.

280. Soil Mechanics. 3 hr. PR: C.E. 115, T.A.M. 101. Origins and distribution of soils, classification of soils, fundamental soil properties, and stresses in soils. Subsurface exploration. Introduction to foundations design and the design and construction of earth structures. 2 hr. rec., 3 hr. lab.

281. Foundations Engineering. 3 hr. PR: C.E. 131, 280. Soils exploration and the design and analysis of engineering foundations. Particular emphasis on earth pressures and the design of retaining walls, studies of bracing systems and the elements of shallow and deep foundations for bridges and buildings. Movement of water through soil structures and control of water in excavations. 3 hr. rec.

290. Civil Engineering Problems. 1-4 hr. For junior, senior, and graduate students.

ELECTRICAL ENGINEERING

E.E.

*25. Electric Circuits. 4 hr. PR: Math. 117, Physics 102. Basic concepts, nonlinear elements, introduction to steady state electrical circuit theory (d-c and a-c), Ohm's law, Kirchhoff's laws, circuit analysis theorems, phasor algebra and its application to a-c circuit analysis. 3 hr. rec., 3 hr. lab.

*105. Electrical Fundamentals. 4 hr. PR: Math. 253, Physics 102. Fundamental principles of electric and magnetic circuits. Induced and generated electro-

*Courses marked with an asterisk may be taken as undergraduate work by students in other colleges and schools.

motive force. Fundamental a-c circuit analysis. Polyphase systems. Elementary electronics. (Primarily for non-electrical engineering students.) 3 hr. rec., 3 hr. lab.

*125. Electrical Circuits. 4 hr. PR: E.E. 25, Math. 253. Complex frequency concept, Laplace transformation, transient analysis of both d-c and a-c circuit analysis. 3 hr. rec., 3 hr. lab.

*126. Electric and Magnetic Fields. 3 hr. PR: E.E. 25, Math. 253, Physics 102. Electric scalar potential; line integrals; the vector concepts of gradient, divergence and curl; flux lines and potential theory; the electric dipole; polarization; electric and magnetic fields of symmetrical geometrical systems; magnetic vector potential; ferromagnetism; elements of field mapping; summary in Maxwell's equations. 3 hr. rec.

*145. Electronic Fundamentals. 4 hr. PR: E.E. 105. A study of solid state devices, oscillators, and amplifiers. (Primarily for non-electrical engineering students.) 3 hr. rec., 3 hr. lab.

*152. Electronics. 4 hr. PR: E.E. 125, 136, Physics 126 or conc. The study and use of semi-conductor devices and vacuum tubes as circuit elements; rectifiers and voltage amplifiers. 3 hr. rec., 3 hr. lab.

180. Electrical Problems. 1-3 hr. For sophomore and junior students.

200. Seminar. (Credit). PR: Senior standing. Special material and projects.

*205. Electrical Fundamentals. 4 hr. PR: E.E. 105. Fundamentals and operating characteristics of electrical machines and transformers. Electron tube, phototube, and transistor characteristics. Electronic circuits. (Not open to electrical engineering students.) 3 hr. rec., 3 hr. lab.

*225. Electric Circuits. 4 hr. PR: E.E. 125. Distributed circuits (transmission lines), steady analysis of distributed circuits, simulation of distributed circuits by equivalent lumped parameter circuits. Interpretation of transmission line as general four terminal network (A B C D constants), matrix methods of combination of four terminal networks, introduction of "modern" network analysis. 3 hr. rec., 3 hr. lab.

226. Electromagnetic Fields. 3 hr. PR: E.E. 126. Plane waves in dielectric media; plane waves in conducting media; transmission lines; wave guides; antennas. 3 hr. rec.

232. Electromechanical Devices. 4 hr. PR: E.E. 225, 226. Fundamentals of electromechanical energy conversion. Transformers and rotating machines. 3 hr. rec., 3 hr. lab.

233. Electromechanical Devices. 4 hr. PR: E.E. 232. Analysis of machine-performance by the principles of electromechanical energy conversion. 3 hr. rec., 3 hr. lab.

235. Electrical Machinery. 3 hr. PR: E.E. 233 or consent. Synchronous machines, windings, calculation of emf and mmf; mmf space functions. Potier diagram, ASA regulation, 2-reactance diagrams. Multiple-winding transformers and auto transformers. 2 hr. rec., 3 hr. lab.

236. Electrical Machinery. 3 hr. PR: E.E. 233 or consent. Commutation theory of machines, d-c and a-c multiple-winding and special purpose machines; multiple machine systems. 2 hr. rec., 3 hr. lab.

*252. Electronics. 3 hr. PR: E.E. 152, 225, 226. Analysis of power amplifiers, tuned amplifiers, oscillators, modulators, demodulators, and wave-shaping circuits. 3 hr. rec.

*Courses marked with an asterisk may be taken as undergraduate work by students in other colleges and schools.

253. Physical Electronics. 3 hr. PR: E.E. 252. A study of the physical principles of electrical conduction and the application of these principles to electronic conduction in solids, electron emission, and conduction in vacuum and gas. 3 hr. rec.

261. Networks and Filters. 3 hr. PR: E.E. 225 or consent. Analysis and synthesis of network and filters. 3 hr. rec.

262. Electronic and Communications Laboratory. 2 hr. PR: E.E. 252 or consent. A study of tuned amplifiers, oscillators, modulators, wave-shaping circuits, transmission line characteristics, and special topics. 6 hr. lab.

*264. Communications Engineering. 3 hr. PR: E.E. 252 or consent. Communications systems, or systems used to transmit information. The underlying principles of modern information transmission systems are stressed. Emphasis is placed upon the fundamental role of system bandwidth and noise in limiting the transmission of information. 3 hr. rec.

270. Engineering Analysis and Design. 3 hr. PR: E.E. 232, 252. Formulation and application of the method of engineering analysis based upon fundamental physical laws, mathematics, and practical engineering considerations. Emphasis is placed on the professional approach to the analysis of engineering problems. 3 hr. rec.

*271. Theory of Digital Computers. 3 hr. PR: Senior standing in Engineering or Mathematics. Introduction to the field of digital computer design. Topics include general computer organization, number systems and number representations, design characteristics of major computer units, Boolean algebra and its application to computer design and sequencing of basic arithmetic processes in a computer. 3 hr. rec.

272. Introduction to Logic Design. 3 hr. PR: Math. 253 or consent. Introduction to digital computing machines. The algebra, geometry and topology of binary logic. The design of combinational logic units and elementary sequential circuits. 3 hr. rec.

275. Pulse Techniques. 3 hr. PR: E.E. 225, 252. An introduction to the response of electrical networks to non-sinusoidal inputs, the analysis of active networks with large signals and the circuits and techniques used in pulse and digital equipment. 3 hr. rec.

280. Electrical Problems. 1-3 hr. For junior, senior, and graduate students.

281. Electrical Power Systems. 3 hr. PR: E.E. 226 or consent. Polyphase transformation with three-phase and with single-phase transformers. Principles of circuit protection and relaying. Principles of grounding. Introduction to symmetrical components. 3 hr. rec.

282. Symmetrical Components. 3 hr. PR: E.E. 226 or consent. An application to the methods of symmetrical phase components in calculating currents in systems under various types of unbalanced conditions. 3 hr. rec.

285. Electric-Power Transmission and Distribution. 3 hr. PR: E.E. 226. Circle diagrams applied to the various problems of power transmission; phase modifier applications and an introduction to power system stability. 3 hr. rec.

286. Fundamentals of Servomechanisms. 3 hr. PR: E.E. 225. Fundamental analysis of the servomechanisms and automatic control devices. 3 hr. rec.

287. Industrial Electronics and Controls. 3 hr. PR: Consent. Electronic and magnetic control equipment and its application in industry. 3 hr. rec.

288. Antennas. 3 hr. PR: E.E. 226 or consent. Analysis and design of antenna systems. 3 hr. rec.

*Courses marked with an asterisk may be taken as undergraduate work by students in other colleges and schools.

*293. Analogue Computers. 3 hr. PR: Math. 253. The theory and operation of analogue computers. Amplitude scaling and time scaling on the analogue computer and application of the analogue computer to the solution of differential equations. 3 hr. rec.

299. Ultra-High Frequency Technology. 3 hr. PR: E.E. 226 or consent. Special problems encountered at high and ultra-high frequencies. 3 hr. rec.

GENERAL

C.

1. Engineering Lectures. (Credit). Required of all freshmen in engineering. A series of lectures designed to acquaint the engineering student at the beginning of his course with the profession he has chosen. 1 hr. lec.

100. Inspection Trip. (Credit).

INDUSTRIAL ENGINEERING

I.E.

*7. Welding and Heat Treatment. 1 hr. Practice in cutting and welding steel and cast iron with oxyacetylene and arc welding equipment. Demonstrations of different methods of heat treatment. One 3 hr. lab.

*11. Machine Work. 2 hr. Equipment, purpose and character of operations, methods of holding work, turning, boring, drilling, grinding, and shaping. Use of precision measuring instruments. Two 3 hr. labs.

*15. Welding, Forming, and Heat Treatment. 2 hr. Molding and casting of nonferrous metals, oxyacetylene welding, electric welding, resistance welding of plates, pipes, tubing, etc. Lectures, recitations, demonstrations, and laboratory practice. 6 hr. lab.

*100. Manufacturing Processes. 3 hr. Lectures, demonstrations, and laboratory work relating to methods, types of equipment and character of operations of welding machines and machine tools. Emphasis is placed on the economic use of machine tools, assembly line manufacture, gauging, and inspection. 2 hr. rec., 3 hr. lab.

110. Tool Design. 3 hr. PR: I.E. 100. Design, construction, application, and economic aspects of jigs, fixtures, and special tools used in manufacturing on a production basis. 2 hr. rec., 3 hr. lab.

131. Fundamentals of Industrial Engineering. 2 hr. PR: Sophomore standing. Principles of organization, including study and design of organization charts. Integration of motion and time study, production control, accounting job evaluation, engineering economy, and other functions of industrial engineering into a composite industrial picture. Review of existing labor laws and current legislation. 2 hr. rec.

*140. Motion and Time Study. 3 hr. PR: Junior standing. Principles and techniques, job analysis, standarization, and formula construction; stop watch and micromotion analysis of industrial operations; development of production and incentive standards. 2 hr. rec., 3 hr. lab.

142. Production Control. 3 hr. PR: I.E. 140. Planning, scheduling, routing and dispatching in manufacturing operations and production control systems. Problems in industrial plant design. Layout for operation and control. Space utilization. 3 hr. rec.

*Courses marked with an asterisk may be taken as undergraduate work by students in other colleges and schools.

*151. Accounting for Engineers. 3 hr. PR: Junior standing. The accounting cycle, journals, and ledgers; study of fixed assets and depreciation; interpretation of financial statements. A survey of the essentials of cost accounting. Emphasis is placed on the utilization of cost data and reports by management, indicating management's control over industrial operations. 3 hr. rec.

*180. Introduction to Digital Computation. 3 hr. PR: Math. 2 or 3. Introduction to stored-program concepts, flow diagrams, looping, decisions, input-output techniques, interpretive systems, algebraic compilers, symbolic assembly systems, machine languages, subroutines, equipment components, and their applications. The student will have considerable opportunity to actually process numerical problems. The field of present and future equipment components will be surveyed, and the advantages and disadvantages of various techniques and systems will be indicated. 2 hr. rec., 3 hr. lab.

*200. Metal-Cutting Theory and Practice. 3 hr. PR: I.E. 100, Mat.E. 250. Metal-cutting tools, tool materials, work materials, cutting fluids, process of chip formation, cutting forces, tool-life tests, economics of tool life, measurement of product. 2 hr. rec., 3 hr. lab.

201. Metal Forming Manufacturing Processes. 3 hr. PR: I.E. 100 or consent. Applications and operations of the basic metal forming processes including the primary metal working processes and the metal shearing, drawing, binding, and squeezing processes, along with the machine tools required for these processes. 3 hr. rec.

205. Metal Forming Theory. 3 hr. PR: I.E. 201. The mechanics and basics of metal forming with elementary theoretical and descriptive investigations of tube-sinking, deep-drawing, wire-drawing, extrusion, cold rolling, and forging. 3 hr. rec.

207. Metal Casting Manufacturing Processes. 3 hr. PR: I.E. 100 and Mat.E. 250 or consent. Fluidity processes used in industry covering non-permanent processes such as sand molding, centrifugal molding, investment molding, and shell molding. Some permanent mold methods will be investigated along with metal melting processes, molding machines, and fundamentals of costing design. 3 hr. rec.

211. Industrial Engineering Problems. 1-3 hr. PR: I.E. 140, and senior standing. Special problems relating to industrial engineering.

*214. Advanced Analysis of Engineering Data. 3 hr. PR: I.E. 244. The application of advanced theories of statistical techniques to analyze and interpret industrial problems. Subjects include multiple regression, curvilinear regression, advanced analysis of variance, randomized complete blocks, Latin Square designs, factorial designs, transformations, and analysis of response curves. Accent is on proper design of experiments, proper interpretation of results, and thorough consideration of all errors of estimation and errors of inference. 3 hr. rec.

*215. Statistical Decision Making. 3 hr. PR: I.E. 244 or consent. Probability relating to decision processes and essential logic in the applications of statistics and how management can recognize situations in which it will be profitable to employ them. 3 hr. rec.

*240. Motion and Time Study. 3 hr. PR: Junior standing. Not for industrial engineering students. Principal aims and applications of time and motion study. Job analysis, standardizations, use of stop watch micromotion analysis, operation and methods analysis. 2 hr. rec., 3 hr. lab.

*244. Engineering Statistics. 3 hr. PR or conc: Math. 108. The use of graphical analysis; measures of central tendency and dispersion; normal, binomial, and Poisson distributions in engineering applications; linear regression and

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correlation; tests of significance, nonparametric statistics, and analysis of variance. 3 hr. rec.

*250. Electonic Computer Data Processing. 3 hr. PR: Senior standing. Fundamentals of digital computer operations, equipment characteristics, input and output components. Elements of number systems. Fundamentals of "IR," information retrieval. Emphasis is placed on integrated systems analysis and design, business and industrial data for computer applications, and fundamentals of programming. Existing equipment systems and the economics of their applications will be reviewed.

253. Analytical Techniques of Operations Research. 3 hr. PR: I.E. 244, Math. 108. A study of the analytical techniques used in operations research and industrial engineering with special emphasis on their application to industrial systems and operations. The applications of matrix algebra, vectors and convex set theory to linear programming. Minimization techniques including differencing, differentiation of single and multiple integrals and Lagrangian multipliers with application to production and inventory problems. Markov Processes with applications to production problems and decision making. 3 hr. rec.

*254. Introduction to Operations Research. 3 hr. PR: I.E. 244, and conc: I.E. 142 or consent. Economic problems of production management, schematic models, linear programming, total value analysis, incremental analysis, Monte Carlo analysis, and equipment investment analysis. 3 hr. rec.

281. Digital Computation for Engineers. 3 hr. PR: Math. 15 or consent. Study of the programming process with emphasis on coding with an automatic programming language FORTRAN. Introduction to methods of digital computation with engineering and scientific applications. Various other programming languages such as ALGOL and SPS. The student will have ample opportunity to analyze engineering and scientific problems. 2 hr. rec., 3 hr. lab.

*287. Engineering Economy. 3 hr. PR: Junior standing. Comparison of the relative economy of engineering alternatives; compound interest in relation to calculation of annual costs; present worth and prospective rates of return on investments; methods of depreciation; sunk costs, increment costs; general economy studies with emphasis on retirement and replacement of equipment; consideration of taxes, public works, and manufacturing costs as related to economic solution of engineering proposals. 3 hr. rec.

*288. Job Evaluation and Wage Incentives. 3 hr. PR: I.E. 140 or consent. Principles used in evaluating jobs, rates of pay, characteristics and objectives of wage incentive plans; incentive formulae and curves. 3 hr. rec.

*290. Industrial Statistics. 2 hr. PR: I.E. 244. Economic objectives of quality control in manufacturing through sampling methods; the Shewhart control chart for variables, attributes, and defects per unit; statistical approach to acceptance procedures. 2 hr. rec.

292. Plant Layout and Design. 3 hr. PR: I.E. 110 and 142. Problems in industrial plant design. Equipment location, space utilization, layout for operation and control, flow sheets, materials handling. Allied topics in power utilization, light, heat, and ventilation. 1 hr. rec., 6 hr. lab.

*294. Standard Manufacturing Costs. 3 hr. PR: I.E. 151. Development of standards for labor, material, and overhead expenses; uses of standards for control; analyses of variances between standard and actual costs. 3 hr. rec.

299. Human Factors Engineering. 3 hr. PR: I.E. 140, Psychol. 115 or consent. An examination of human factors engineering and man-machine systems to include a study of ambient environment, human capabilities and equipment design. Application of human factors engineering in workplace design, main-

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tainability, and task design methodology. Study of system design for man-computer interface, life support requirements, simulators and man-machine systems. 2 hr. rec., 3 hr. lab.

MECHANICAL ENGINEERING

M.E.

20. Engineering Drawing and Graphics I. 3 hr. PR: Plane geometry. Lettering, use of instruments, geometric construction, orthographic projection, section and conventions, auxiliary views, descriptive geometry, pictorial sketching, dimensioning. 1 hr. rec., 6 hr. lab.

26. Engineering Drawing and Graphics II. 2 hr. PR: M.E. 20 and Math. 4. Graphical calculus, empirical equations, nomography vectors, graphical accuracy, co-ordinate systems. 6 hr. lab.

109. Mechanism. 2 hr. PR: M.E. 26 and Math. 117. Analytical and graphical analysis of the displacement, velocity and acceleration properties of fundamental machine configurations. Study of the requirements for constrained motion as a basis for mechanical synthesis and motion programming. 6 hr. lab.

112. Kinematics and Dynamics of Machines. 3 hr. PR: M.E. 109 and T.A.M. 104. Analytical and graphical analysis of force and motion effects applying to mechanical systems. Problems of periodic motion on force and isolation.

120. Engineering Thermodynamics. 3 hr. PR: Physics 111 and Math. 117. First and second laws of thermodynamics; energy equations; properties of gases and vapors; gaseous mixtures and combustion. 3 hr. rec.

121. Thermodynamics of Engineering. 3 hr. PR: Physics 111, Math. 117. Principles of thermodynamics; properties of gases and vapors; vapor cycles; internal combustion engines cycles; refrigeration; and heat transfer. Not open to students majoring in mechanical engineering. 3 hr. rec.

125. Engineering Thermodynamics. 3 hr. PR: M.E. 120 or consent. Continuation of M.E. 120; gas cycles; vapor cycles; air-vapor mixtures; flow; thermodynamics relations and equilibrium. 3 hr. rec.

126. Advanced Engineering Graphics. 2 hr. PR: Math. 117. Nomography, graphical and numerical analysis curve fitting, vectors, problem solution by analog and digital computers, graphical integration differentation.

132. Measurements and Computers. 2 hr. PR or conc: M.E. 120. Measurements, data analysis, standards and accuracy, calibration, pressure, force and temperature, etc., as applied in the experimental technique. An introduction to analog and digital computations. 1 hr. rec., 3 hr. lab.

133. Engineering Laboratory. 2 hr. PR: M.E. 132. Continuation of M.E. 132. Experiments involving heat transmission, refrigeration, and internal combustion engines. 3 hr. lab.

201. Design of Machine Members. 3 hr. PR: T.A.M. 103 and M.E. 112 or consent. Analysis and design of machine members based on the theory of strength of materials and its modifications due to manufacturing processes and economic considerations. Emphasis is on rational methods and the development of judgment in the design. 1 hr. rec., 6 hr. lab.

202. Engineering Analysis and Design. 3 hr. PR: M.E. 201 and consent. Use of fundamental principles of mathematics, statics, physics, mechanics, thermodynamics, and heat transfer in the rigorous analysis of engineering problems. Determination of the critical specifications of the problem solution and the use of a creative approach to the satisfaction of these critical specifications in a workable system. 2 hr. rec., 3 hr. lab.

203. Machine Design. 3 hr. PR: M.E. 201. Design of complete machines to perform given functions. Creative design is encouraged to provide new ideas. Final designs are selected to perform the function, be economical and easy to fabricate, and have a generally pleasing appearance. 1 hr. rec., 6 hr. lab.

204. Mechanical Vibrations. 3 hr. PR: Math. 253 and M.E. 112 or consent. Fundamentals of vibration theory. Free and forced vibration of single and multiple degree of freedom systems. Solution by Fourier and Laplace transformation techniques. Transient analysis emphasized. Energy methods. 3 hr. rec.

205. Kinematics. 3 hr. PR: M.E. 112 and Math. 253, or consent. Geometry of constrained motion, kinematics synthesis and design, special linkages. Coupler curves, inflection circle, Euler-Savary equation, cubic of stationary curvature and finite displacement techniques. 3 hr. rec.

223. Power Plants. 3 hr. PR: M.E. 125. Principles of design and operation of modern steam power plants for central stations and for process industries. Each student submits an individual design problem. 3 hr. rec.

224. Steam Turbines. 3 hr. PR: M.E. 125. The theory of fluid dynamics and the thermodynamics of the modern turbines; materials, construction details and design of important elements; influences on economy of variations in cycles and operative ranges. 3 hr. rec.

225. Problems in Thermodynamics. 3 hr. PR: M.E. 125 or consent. Detailed study of thermodynamic systems with special emphasis on actual processes. The problems presented are designed to strengthen the background of the student in the application of the fundamental thermodynamic concepts. 2 hr. rec., 3 hr. lab.

228. Mechanical Engineering Laboratory. 1 hr. PR: M.E. 132. Application of measurements to the testing of machines, heat transmission, refrigeration, internal combustion engines, etc. 3 hr. lab.

229. Internal Combustion Engines. 3 hr. PR: M.E. 121 or M.E. 125. The thermodynamics of the internal combustion engines; Otto cycle; Diesel cycle; two- and four-cycle engines, fuels, carburetion and fuel injection; combustion; engine performance, supercharging. 3 hr. rec.

230. Heat Transfer I. 3 hr. PR: M.E. 120 or M.E. 121. Steady state and transient conduction, including extended surface and numerical methods, emphasizing both forward and backward time step methods. Thermal radiation including radiation functions and radiation network theory. Boundary layer equations and forced and free convection are also covered. 3 hr. rec.

231. Introduction to Gas Dynamics. 3 hr. PR: M.E. 125 or M.E. 121, Math. 240 and Math. 253. Basic fundamentals of gas dynamics, one-dimensional gas dynamics and wave motion, methods of measurement, effect of viscosity and conductivity, and concepts from gas kinetics. 3 hr. rec.

235. Heat Transfer II. 3 hr. PR: M.E. 230. A continuation of M.E. 230, covering nonlinear extended surface; gas radiation; freezing, heat exchanger theory; recovery factor and high speed flow; and mass transfer. Also, periodic flow and application of the digital computer to problems in heat transfer. 3 hr. rec.

250. Heating, Ventilating, and Air Conditioning. 3 hr. PR: M.E. 125 or consent. Methods and systems of heating, ventilating, and air conditioning of various types of buildings, types of controls and their application. 3 hr. rec.

260. Introductory Engineering Systems Analysis. 3 hr. PR: Senior standing. A study of analogues and mixed systems. Similitude of mechanical, electrical, and acoustic dynamic systems. Dimensional analysis and theory of model design. 3 hr. rec.

265. Engineering Acoustics. 3 hr. PR: Math. 253 and consent. Use of fundamental principles of mathematics and physics to develop the basic theories of sound. Application of these theories involving sound in closed areas, the various modes of sound transmission, noise control, and psychoacoustic criteria. 3 hr. rec.

271. Introduction to Feedback Control Theory. 3 hr. PR: Math. 253 and E.E. 105 or equivalent background. Introduction to automatic control systems and concepts of feedback. Transfer function analysis of the equations of motion. Transient and steady state response. Stability criteria using Nyquist, root locus and frequency response techniques. 3 hr. rec.

280. Mechanical Problems. 1-6 hr. For junior, senior, and graduate students.

THEORETICAL AND APPLIED MECHANICS

T.A.M.

101. Statics. 3 hr. PR: Math. 117, Physics 11 (or reg. in Math. 117). Fundamental definitions and the concept of static equilibrium; systems of forces and couples; application to solution of trusses and frames; centroids and moments of inertia. 3 hr. rec.

102. Mechanics of Materials I. 3 hr. PR: T.A.M. 101 and Math. 117. Stress, strain, stress-strain relationships; Mohr stress and strain-circles; load-stress and load-deformation relationships for axial, torsion, bending, and buckling loads; inelastic as well as elastic theory is considered; deflections; column theory. 3 hr. rec.

103. Mechanics of Materials II. 3 hr. PR: T.A.M. 102 and Math. 117. Theories of failure and design procedures; survey of experimental stress analysis; fatigue, energy, creep, relaxation, and temperature considerations. Laboratory work in behavior of common engineering materials under load; evaluation and interpretation of mechanical properties. 2 hr. rec., 3 hr. lab.

104. Dynamics. 3 hr. PR: T.A.M. 101 and Math. 117. Kinematics of a particle; moment of inertia of masses; translation, rotation and plane motion of rigid bodies; principles of work and energy, impulse and momentum; application to engineering problems. 3 hr. rec.

200. Advanced Mechanics of Materials I. 3 hr. PR: T.A.M. 103 or consent. Energy methods; localized stresses; nonsymmetrical bending; curved flexural members; thick-walled cylinders and rotating disks; beams on elastic supports.

201. Theory and Application of Oscillatory Phenomena. 3 hr. PR: T.A.M. 104. Study of oscillations or vibrations in acoustical, electrical, hydraulic and mechanical systems. 3 hr. rec.

202. Advanced Materials Laboratory. 2-4 hr. PR: T.A.M. 103. Continuation of T.A.M. 103 with emphasis on a selected problem or problems.

203. Experimental Stress Analysis. 3 hr. PR: T.A.M. 103, 104. Introduction to some of the more common experimental methods of analyzing stress distributions. Photoelasticity, brittle lacquers, birefrigent coatings, strain gage techniques and instrumentation, as applied to problems involving static, dynamic and residual stress distributions. 2 hr. rec., 3 hr. lab.

250. Intermediate Dynamics. 3 hr. PR: Consent. Mechanics of a particle; curvilinear coordinates, geometry of space curves, moving reference frames, generalized coordinates. Dynamical principles; D'Alembert's principle, principle of virtual work, Lagrange's equations, variational formulation of Hamilton's principle. 3 hr. rec.

280. Special Problems in Mechanics. 1-3 hr. PR: T.A.M. 103 and consent. For junior, senior, and graduate students.

Courses in the School of Mines

ENGINEERING OF MINES

E.M.

1. Freshman Orientation. I. (Credit). Required of all freshmen in mining and petroleum engineering. A series of lectures designed to acquaint the student at the beginning of his course with the characteristics and requirements of the engineering profession, with particular attention to the mineral engineering fields. 1 hr. lec.

102. Mine Surveying. SI. 5 hr. PR: Math. 15. Principles of surface and subsurface surveying, celestial observations, and related calculations together with intensive field practice in underground and surface surveying. Rec. and field work arranged.

106. Mineralogy. II. 2 hr. PR: Chem. 2. Mineral identification, blowpipe analysis of minerals; occurrence, geographic distribution and utilization of minerals; elements of crystallography. Two 3 hr. labs.

108. Fundamentals of Mining I. 4 hr. PR: Geol. 1, Math. 117, Physics 102, E.M. 102, or consent. Mineral prospecting, drilling, use of explosives, mining methods for bedded deposits and ore bodies, timbering and application of mining machinery. 4 hr. rec.

112. Mine Plant Design. II. 3 hr. PR: E.M. 212, T.A.M. 102, C.E. 115 and Mat.E. 250 or concurrent enrollment. Applications of the principle of mechanics and mining technology to the analysis and design of mine building, head-frames, bins, skips and cages. 2 hr. rec., 3 hr. lab.

200. Elements of Mineral Conservation. I. 3 hr. PR: Open to any student in the University with Junior standing. A study of the future demands for mineral resources including coal, water, oil, gas, ores, and industrial minerals and the causes of mineral loss in production and utilization and how to avoid or minimize them.

201. Fire Control Engineering. 3 or 4 hr. PR: Senior standing in an engineering curriculum or consent. The aspects involved in the control from fire, explosion and other related hazards. Protective considerations in building design and construction. Fire and explosive protection organization including fire detection and control. Lectures 3 and/or lab. 1 hr.

207. Introductory Seismology. I, II. 1 hr. PR: Physics 102. Earthquakes and the causes and area distribution; theory of elastic waves; the principles of seismograph construction, adjustment, and operation; interpretation and calculation of seismographs with exercises provided by records of the University seismograph station. 1 hr. rec.

209. Mineral Preparation. I, II. 3 hr. PR: T.A.M. 104, or consent. Principles of preparation, beneficiation and concentration of metallic and non-metallic ores for further processing or utilization. 2 hr. rec., 3 hr. lab.

212. Advanced Mining. II. 3 hr. PR: E.M. 108, E.E. 105. Engineering principles, methods and equipment applied to mine transportation, hoisting, and drainage. 3 hr. rec.

213. Mine Ventilation. I. 3 hr. PR: E.M. 108, T.A.M. 104 and C.E. 115. Principles, purposes, methods and equipment pertaining to the ventilation of mines. 2 hr. rec., 3 hr. lab.

215. Industrial Safety Engineering. I, II. 2 hr. PR: Junior standing or consent. Analysis of problems of industrial safety and accident prevention, laws pertaining to industrial safety and health, compensation plans and laws, and industrial property protection. 2 hr. rec.

217. Coal Preparation. I, II. 3 hr. PR: E.M. 212, C.E. 115, E.M. 209, and E.M. 210. Formation of coal, rank classification of coal, coal petrography, principles of preparing and beneficiating coal for market with laboratory devoted to sampling, screen analysis, float and sink separation and use of various types of coal cleaning equipment. 2 hr. rec., 3 hr. lab.

218. Advanced Mineral Preparation. I, II. 3 hr. PR: E.M. 108, E.M. 209, and E.M. 210. The theory and practice of concentration ores and industrial minerals with special consideration to the more recent advances in the beneficiation of both ores and coal. 2 hr. rec., 3 hr. lab.

219. Advanced Mining Methods for Vein Deposits. I, II. 3 hr. PR: E.M. 108, T.A.M. 104. Methods and systems of mining other than flat seams. Emphasis placed on selection of methods in relation to cohesive strength of ore bodies and their enclosing wall rocks. Mining of anthracite seam included. 3 hr. rec.

220. Mine Design. I, II. 3 hr. PR: E.M. 212, E.M. 241, and registration in E.M. 112. A comprehensive design problem involving underground mining developments or design of surface plant or both, as elected by the student in consultation with the instructor. A complete report on the problem is required including drawings, specifications and cost analysis. 9 hr. lab.

222. Mine Equipment and Machinery. I, II. 3 hr. PR: E.E. 205, E.M. 212. Selection, installation, operation, and maintenance of mining equipment. 3 hr. rec.

223. Mine Management. II. 3 hr. PR: Math. 253, E.M. 212 and senior standing. Economic, governmental, social, and labor aspects of mining as related to the management of a mining enterprise. 3 hr. rec.

224. Mining Engineering Problems. I, II. 1-6 hr. PR: Senior or graduate standing. Investigation and detailed report on a special problem in mining engineering related to coal mining or mineral mining. Supervision and guidance by a member of the graduate faculty.

228. Mine Equipment and Machinery Controls. II. 3 hr. PR: E.M. 227 or consent. Principles, application and use of electric and hydraulic devices and circuits for protection and control of mine machinery and equipment. 3 hr. rec.

229. Advanced Mining Equipment Applications. I. 3 hr. PR: E.M. 228. Structural, mechanical, hydraulic and electrical characteristics of the more common items of mining equipment. Controls, electrical and hydraulic circuits, and mechanical transmissions with associated problems. Laboratory design of a control system for a mining machine. 2 hr. rec., 3 hr. lab.

230. Elements of Geophysical Prospecting. I. 3 hr. PR: Geol. 3, Physics 102. Principles, calculations and application of methods for locating subsurface oil, gas, and mineral deposits.

234. Applied Geophysics. II. 3 hr. PR: Physics 102 and Geol. 151 or consent. Origin of the universe and the planets, heat and age of the earth. Application of the science of geophysics in the location and analysis of earthquakes and in prospecting for oil and minerals.

241. Mechanics of Ground Control in Mines. I. 3 hr. PR: T.A.M. 102, Math. 253, E.M. 108 or consent. Structure of the earth's crust, bedding planes, joints, heterogeneity, mechanical properties of rocks, stress-time-deformation relationships in rocks, theoretical stress distribution about mine openings, practical effects, factors in mine pillar design, pillar bursts, creeps and squeezes, mining subsidence. 2 hr. rec., 3 hr. lab.

PETROLEUM ENGINEERING

Pet.E.

106. Principles Applying to Oil and Gas Field Development and Production. II. 4 hr. PR: Math. 117 and Geol. 1. Introduction to principles and science of oil property development and oil and gas production science. 3 hr. rec., 3 hr. lab.

203. Petroleum Property Valuation and Management. II. 2 hr. PR: Pet.E. 106, Econ. 52, Math. 117 or consent. Petroleum property valuation and acquisition; economic, governmental, and social aspects of management of oil and gas properties. 2 hr. rec.

206. Natural Gas Engineering. II. 3 hr. PR: Pet.E. 106, C.E. 115. Principles of natural gas production, transmission, distribution, processing, regulation, measurement, storage and analysis with a laboratory devoted to the principles of the equipment utilized in the above named operations. 2 hr. rec., 3 hr. lab.

216. Petroleum Engineering Design. II. 3 hr. PR: Pet.E. 232, Material Engr. 250. A comprehensive problem in design involving systems in oil and gas production, field processing, transportation and storage. Three 3-hr. labs.

224. Petroleum Engineering Problems. I, II. 1-6 hr. PR: Senior or graduate standing. Investigation and detailed report on a special problem in petroleum or natural gas engineering.

232. Petroleum Reservoir Engineering. I. 5 hr. PR: Pet.E. 236. Concepts on application of properties of rocks and rocks-fluids systems which are fundamental to engineering analysis of petroleum reservoirs, mechanics of fluid flow in porous media, production by depletion drive, by frontal displacement, by water drive, by segregation drive and secondary recovery. 5 hr. rec.

235. Fundamentals of Well Logging. II. 3 hr. PR: Math. 253, Pet.E. 106, or consent. Principles of the various well logging methods and related calculations with exercises in interpretation of data from actual well logs. 2 hr. rec., 3 hr. lab.

236. Mechanics of Hydrocarbon Fluids. I. 3 hr. PR: Physics 102, C.E. 115, Pet.E. 106, Chem. 163. The qualitative and quantitative phase behavior of single and multicomponent hydrocarbon systems with emphasis on application to petroleum production engineering and petroleum reservoir engineering. 2 hr. rec., 3 hr. lab.

237. Composition and Properties of Oil Well Drilling Fluids. I. 2 hr. PR: Pet.E. 106, Chem. 163 and C.E. 115. Principles of drilling fluid control including a laboratory for pilot testing, mud design procedures and measurement of composition and properties. 1 hr. rec., 3 hr. lab.

238. Oil and Gas Law. II. 2 hr. PR: Pet.E. 106. Landowners interest, the oil and gas lease, transfer of interest, conservation laws, contracts, business organization, sales, professional registration, patents. 2 hr. rec.

240. Secondary Recovery of Oil by Water Flooding. I. 3 hr. PR: Pet.E. 232 or consent. Theory of immiscible fluid displacement mechanism, evaluation, and economics of water flood projects and oil field flooding techniques. 3 hr. rec.

Research and Extension

THE ENGINEERING EXPERIMENT STATION

C. A. Arents, *Director*
J. A. Kent, *Associate Director*

The chief functions of the Engineering Experiment Station are to encourage and carry on research and investigations that will enhance the industrial and economic welfare of the people of West Virginia; to make original contributions to the fundamental principles and knowledge along scientific and engineering lines; and to stimulate and train graduate students in research activities.

The research undertaken by the Station therefore is primarily concerned with investigations in the production, processing, and utilization of the natural resources of West Virginia; investigations that will aid existing industries and promote the development of new industries in the State; and investigations that will aid in the planning, design, and development of the public works of the State. As a consequence of this program, the subjects receiving particular attention by the staff of the Station are coal, oil, gas, clays, stone, sand, timber, water, steam and electric power, sewerage, sanitation, road building, transportation, aeronautics, and communications.

The Station will assist in compiling surveys and in conducting investigations of the industrial requirements and possibilities of any region or community in the State. It cooperates with the West Virginia University Agricultural Experiment Station, State Road Commission, State Geological and Economic Survey, State Water Commission, U. S. Bureau of Mines, national engineering societies, and state or national agencies whose assistance may promote the more effective fulfillment of the Station's functions.

To aid State industrial organizations that lack facilities and personnel to undertake important research investigations which arise in the development of their operations, the Station stands ready to assist in the prosecution of investigation on their fundamental problems. Such advisory services are free, but any special equipment, materials, or labor that may be needed must be supplied by the organization for which the work is being done. Several companies and technological associations are sponsoring research fellowships in the Station.

The staff of the Station includes part-time services of teaching members of the faculties of the College of Engineering and the School of Mines, as well as full-time research engineers and chemists and part-time graduate student research assistants and fellows.

The results of the studies, surveys, investigations, and researches of the Experiment Station are published in bulletin form. Two series of bulletins are issued, and to date there are 28 numbers in the Research Series and 63 in the Technical Series. The Technical Bulletins contain certain selected papers from the *Proceedings* of the Annual State Water Purification Conferences, the State Coal Conferences, the Appalachian Gas Measurement Short Courses, the Appalachian Underground Corrosion Short Courses, and the Industrial Engineering Conferences. In addition, several technical papers have been published; these are articles in the engineering, scientific, and technical journals. A list of publications and copies of the bulletins may be obtained upon application to the Director of the Engineering Experiment Station.

Through the College of Engineering and the School of Mines the Station has access to a wide range of talent and specialized knowledge and is able to supplement these with the resources of other colleges.

U. S. BUREAU OF MINES STATION

The United States Bureau of Mines maintains laboratory and pilot-plant facilities for research and development work on the production of synthesis gas from coal, which is part of the Bureau's over-all program for synthetic fuel development.

Under the terms of a cooperative agreement between the University and the Bureau, students are employed by the Bureau on a part-time basis.

In the selection of part-time student workers, preference is given to those in the upper one-third of their class.

INDUSTRIAL ENGINEERING CONFERENCE

The sixteenth annual Industrial Engineering Conference, sponsored by the Department of Industrial Engineering of the College of Engineering, and co-sponsored by the Charleston-Huntington, Mid Ohio Valley, and Upper Ohio Valley Chapters of the American Institute of Industrial Engineers, will meet at the University on April 5-6, 1965. The Conference is designed to promote the dissemination of information on industrial engineering principles and techniques, looking toward increased efficiency and reduced costs in industrial processes. Specialists in various fields present papers and lead discussions in problems related to specific subjects.

FORCED WARM AIR SHORT COURSE

The Forced Warm Air Short Course, held annually during January for three days, is sponsored by the Department of Mechanical Engineering of the College of Engineering, and the gas utilities of West Virginia.

The short course offers an opportunity for heating contractors, appliance sales personnel, and others in the forced warm air field to tap the resources of industry and the University. The objective of this course is to promote better design and installation of forced warm air heating systems.

MINING AND INDUSTRIAL EXTENSION*

The Department of Mining and Industrial Extension of the School of Mines conducts courses of instruction in practical subjects in various sections of the State where groups of individuals wish to study and receive training in subjects pertaining to their everyday work. The Department also aims to disseminate useful knowledge which has been amassed by research studies at the University to all citizens in the State, and in this way to bring the University and its opportunities for learning to various groups of students who desire to enroll in its extension department. Information and special announcements pertaining to Extension courses may be obtained by writing to the Department of Mining and Industrial Extension, West Virginia University, Morgantown.

SHORT COURSE IN COAL MINING*

The fifty-third annual Short Course in Coal Mining will begin Monday, May 10, 1965, and continue until Friday, June 25, 1965.

The Short Course in Coal Mining offered by the Department of Mining and Industrial Extension gives an opportunity to operators, officials, and employees of mining companies to obtain instruction pertaining to their work. The subjects covered in the short course are: explosives, methods of mining, timbering, mine gases, mine ventilation, hoisting, mine drainage, safety lamps, mine management, electricity in mines, mine fires and explosions, organization and administration, mining arithmetic, and elementary drawing. Tuition is free.

Special attention is given to students desirous of preparing themselves for the teaching of mining classes under the Smith-Hughes and George-Dean Acts.

At the close of the short course the West Virginia Department of Mines conducts an examination for mine foremen and fire bosses.

SHORT COURSE IN COAL PREPARATION*

The fifteenth annual Short Course in Coal Preparation conducted by the University will begin Monday, June 14, 1965, and continue for six weeks. This course is held principally for men who have been associated with the sizing and preparing of coal for the market.

The classroom portion of the course covers the purpose of coal preparation, breaking and crushing, screening, cleaning, analysis of float and sink tests and washability curves, dewatering and drying, dedusting and dust collection, recovery of fines, auxiliary equipment, treatment of coal surfaces, loading, cost, power, water, labor, and analysis of flow sheets.

*Administered through the West Virginia Center for Appalachian Studies and Development.

In the laboratory, the equipment includes a sand media cone, Baum jig, calcium chloride washer, heavy media cone washer, concentrating tables, basket jigs, air cleaning table with filter-type dust collectors, magnetic separator, centrifuges, and a complete closed-circuit mineral floatation unit. These units are all self-contained pilot units with auxiliary equipment to permit complete test operation.

SHORT COURSE IN MINE EQUIPMENT AND MAINTENANCE*

The thirteenth annual session of the Mine Equipment and Maintenance Short Course will begin Monday, May 10, 1965, and continue until Friday, June 25, 1965.

This course is offered to persons whose interest is in the maintenance of coal mining equipment. The subjects covered in this short course are: practical mechanics, equipment hydraulics, equipment electricity, shop mathematics, lubrication, electricity and hydraulic measurements, electrical controls, underground mining equipment, substation and fan maintenance, preparation plant maintenance, and maintenance reports and records.

VOCATIONAL COURSES OFFERED IN EXTENSION*

Courses in foreman training and other special courses for those in industry are offered in centers where there is sufficient interest. The instruction in these courses is carried on by the University extension instructors who visit each center every week.

At the present, the work is planned on a two-year basis to cover mine gases, safety lamps, ventilation, timbering, explosives, haulage, prevention of mine accidents, mine waste, drainage and pumping, mining methods, foremanship, electricity, mine fires and explosions, and coal geology. In each of these unit courses, particular emphasis is placed on safety features, state mining laws, and application of arithmetic to solving mining problems.

In addition to the above, special classes are offered in such subjects as effective speaking, group discussion, mine equipment and maintenance, mine surveying, coal preparation and other selected subjects for which there is local demand.

APPALACHIAN GAS MEASUREMENT SHORT COURSE*

The Appalachian Gas Measurement Short Course, held annually on the campus, is conducted by the University in cooperation with the Public Service Commission of West Virginia, the West Virginia Oil and Natural Gas Association, manufacturers of gas measurement and regulation equipment, and public utilities and industries producing, marketing, or consuming natural gas in West Virginia and neighboring states. The course provides instruction in the theory and practice of gas measurement and regulation, and is designed to be of interest to executives and officials of gas companies as well as to metermen. The 1965 Short Course will meet on August 24, 25, and 26, 1965.

Additional information will be available from the School of Mines, West Virginia University, Morgantown.

FIRE SERVICE EXTENSION SCHOOLS*

The thirty-fifth annual West Virginia State Fire School, conducted by the University in cooperation with the State Fire Marshal and the West Virginia Rating Bureau, will meet on the campus July 19-23, 1965.

It affords information on new developments and intensive training in various aspects of fire fighting to members of the fire service in the State. In addition, three short courses are provided on selected subjects pertinent to fire training at various times during the year. Announcements will be made as to the dates these schools will be held and the subjects to be considered. The permanent fire protection research and training center maintained on the campus, in cooperation with the office of the State Fire Marshal, will be utilized in the training provided by the annual State Fire School as well as by these short courses.

In addition, the University, in cooperation with the Vocational Division of the State Department of Education, offers the Firemen's Extension Course to fire departments in West Virginia. The course may be had upon application by the chief of any organized municipal or industrial department.

Instructional material covers such subjects as local water supply and distribution, apparatus and equipment, principles of combustion, portable extinguishers, hydraulics, pump operation, respiratory apparatus, hose and ladder practices, flammable liquids and gases, and fire fighting tactics.

Classes lasting three hours meet once a week for a period of 11 weeks. The courses are available at various centers in the State throughout the school year. The services of a full-time fire service instructor are available or the classes may be taught by a local instructor if desired. Approximately one-third of the total class time is devoted to actual fire department evolutions. Additional information on short courses and extension classes may be had by addressing an inquiry to the Director of Fire Service Extension, School of Mines, West Virginia University.

APPALACHIAN UNDERGROUND CORROSION SHORT COURSE*

The tenth annual Corrosion Short Course for the Appalachian area will meet on the campus on June 8, 9, and 10, 1965.

The Short Course affords an opportunity for personnel concerned with underground corrosion to add to their knowledge of the subject and to learn of new developments in this field. This course is sponsored by the School of Mines.

Further information on this program may be obtained from the School of Mines, West Virginia University, Morgantown.

PETROLEUM AND NATURAL GAS EXTENSION COURSES*

In cooperation with the petroleum and natural gas industry, the Industrial Extension Department offers a five-year course of study in this subject at various locations throughout the State.

Course I is of a preparatory nature, and includes a review of mathematics and the principles of physics and mechanics. Course II covers such topics as the properties of natural gas, fluid flow, gas measurement, and gas transmission. Course III includes meter testing, pressure regulation, and compression. Course IV treats the principles of gas and oil, and production practices.

Classes are organized in September and meet weekly for a period of approximately eight months. Instructors are employed on a part-time basis by the University and are selected for technical training, ability, and industrial experience in the subjects which they will teach.

COAL RESEARCH BUREAU

JOSEPH W. LEONARD, *Director*

The Coal Research Bureau of the School of Mines was established by the University and written into law by the Legislature in 1962 following recommendations made by the Governor's Scientific Advisory Council on the Uses of Coal.

The Bureau's purpose is to find new uses and markets for West Virginia coal by actively carrying on a coal research program looking toward that end.

The Bureau is empowered to accept gifts, grants and contracts for coal research and to contract for research services with outside agencies. The research in the Bureau is carried on by the director and staff of the Bureau subject to the rules and regulations of the Board of Governors and under the supervision and direction of the Dean of the School of Mines. The work done by the Bureau covers a broad scope of technical interests ranging from economic studies to highly technical studies involving coal carbonization and conversion of coal to liquid and gaseous fuels. The Bureau keeps abreast of the work done by other research organizations and works in close cooperation with the Federal Bureau of Mines, the State Department of Mines, the Planning and Research Division of the State Department of Commerce, the Office of Coal Research, as well as with other divisions and departments of the University.

An Advisory Committee on Coal Research, appointed by the Governor, advises and counsels the University on the program of the Bureau and makes recommendations to the Governor and Legislature concerning the support of its program.

From time to time the Bureau will publish reports of its activities, findings, and recommendations and distribute them to interested parties and agencies.

*Administered through the West Virginia Center for Appalachian Studies and Development.

The School of Journalism

FACULTY

Quintus Charles Wilson, Ph.D., *Dean of the School of Journalism and Professor of Journalism* (1961).
Paul Alexander Atkins, M.A., *Associate Professor of Journalism* (1961), 1953.
Donovan Hiner Bond, M.A., *Professor of Journalism* (1960), 1946.
Richard Lee Hopkins, M.S.J., *Instructor in Journalism* (1963).
John Darrell Lee, B.A., *Lecturer in Journalism* (1964).
James Roger Redmond, B.S.J., *Lecturer in Journalism* (1964).
Perley Isaac Reed, Ph.D., *Director and Professor Emeritus of Journalism* (1958), 1920.
Guy Harry Stewart, Ph.D., *Associate Professor of Journalism* (1960), 1948.
William Robert Summers, Jr., M.A., *Associate Professor of Journalism* (1960), 1952.
James Robert Young, M.A., *Assistant Professor of Journalism* (1954).

General Information

On April 22, 1939, the Board of Governors separated the former Department of Journalism from the College of Arts and Sciences and reorganized it as a School of Journalism, with an administrative status similar to that of other schools and colleges of the University. At the time, West Virginia's was one of six journalism schools in the United States to achieve such an independent status.

The School of Journalism has a staff of six full-time professors, two part-time lecturers, and four graduate assistants. A University newspaper, forerunner of the present *Daily Athenaeum*, began publication November 9, 1887. The first journalism instruction at West Virginia University consisted of a two-hour course in news writing offered in 1915 in the Department of English of the College of Arts and Sciences. The same department by 1920 offered more journalism courses, and in 1927 a separate Department of Journalism, built around a full professional curriculum, was established.

ACCREDITATION

The School of Journalism is accredited by the American Council on Education for Journalism for the Advertising and News-Editorial sequences. A.C.E.J. approval is held by only forty-seven colleges and universities.

The quality of the School's program also has been recognized by memberships in the American Association of Schools and Departments of Journalism and the American Society of Journalism School Administrators.

AIMS

The School of Journalism's objectives are:

1. To recruit men and women capable of serving the public interest through careers in journalism.
2. To help these young people achieve proficiency in the techniques employed in reporting, editing, and administering newspapers and other publications, and in the skills of advertising and radio-television journalism.
3. To make it possible for them to acquire, through a liberal arts background as well as their professional studies, that understanding of society's problems which is essential for effective leadership in any field.
4. To acquaint them with the responsibilities which must be assumed by communications specialists, and with the opportunities which are available.
5. To provide them with a knowledge of the role of journalism in society.
6. To carry on systematic research pertaining to problems in the field of communications.
7. To serve the citizens and communications media of West Virginia and the nation to the fullest extent that the abilities of students and staff members will permit.

STANDARDS

From the beginning, instruction in journalism at the University has been in accord with the best professional school standards. Emphasis has been on quality, not numbers.

Staff members have been engaged with careful attention to their individual ability to give expert instruction in particular fields. Course offerings are changed from time to time to correspond to progressive changes in the profession. Class sizes have seldom reached proportions where individual instruction has had to be sacrificed. The School conforms to recognized national standards.

LOCATION AND EQUIPMENT

The School of Journalism, after being housed in Woodburn Hall for more than thirty-two years, moved into Martin Hall in 1953, where it occupies most of the building.

With its basement and three stories, the School has four classrooms plus an auditorium seating almost 200 persons; laboratories for advertising layout, photography, public relations and industrial journalism, radio-television, and typography instruction; a newsroom, a reading room, a room housing the West Virginia Hall of Fame, and several offices for the faculty and editorial staff.

In many respects the rooms devoted to instruction in newspaper editing and publishing are equipped like the editorial and business quarters of a large weekly or small-city daily newspaper. The newsroom contains a U-copy desk, work tables and desks, telephones, and some two dozen typewriters. There are teletypewriters on which United Press International and Associated Press dispatches are received. These reports are edited by journalism majors under the supervision of faculty members.

The adjacent reading room contains newspapers, magazines, and some reference works. It receives daily representative newspapers and magazines, of the nation as well as almost all West Virginia dailies and weeklies. It makes available for study about 40 dailies, many weeklies, a number of the standard magazines, and a collection of high school and college papers. The School subscribes to the important special periodicals of the profession.

For instruction in typography and advertising production, a laboratory has been equipped not only for providing demonstration material but also for giving the individual student practice in the setting and adaptation of type. The advertising-layout laboratory is supplied with special tables and desks for applied instruction. The facilities of the photography laboratory include the equipment essential to basic camera-print techniques. The School's radio-television laboratory is in 300 Martin Hall. Here, too, the School's telephone reporting laboratory is housed. In addition to such basic items as tables, typewriters, and a conference call telephone system the room has a 21-inch television receiver. Other equipment used in training students in broadcast journalism includes 16-mm. motion picture cameras, a 16-mm. motion picture projector, film editors with splicing units and viewers, and standard tape recorders. The School offers comprehensive programs of instruction in industrial publications and public relations. To introduce students to the limitations and possibilities of type, the School also has one Linotype and a medium-sized automatic Heidelberg platen press.

The journalism building also contains the office of the West Virginia Press Association, which makes available certain publications, periodicals, information, and other materials from its files and records.

Additional opportunities for observation and practice, especially in the business and mechanical aspects of newspaper work, are provided at the plant of the West Virginia Newspaper Publishing Company in Morgantown, where the *Daily Athenaeum*, the student newspaper, is printed under contract.

PRACTICE OPPORTUNITIES

Opportunities for applying the principles of sound newspaper and radio-television practice are good. The *Daily Athenaeum*, a four-day campus newspaper, is produced by journalism students in laboratories conducted from 3 to 5:30 P.M. and from 7 to 11 P.M. daily except Friday, Saturday, and Sunday. Reporters cover the

University community thoroughly. Trained deskworkers not only edit the local reporters' copy but also prepare for publication the dispatches of state, national, and world origin received on the United Press International and Associated Press wires. Local pictures are taken by the newspaper's staff photographers, and other news pictures are selected from mats purchased from a national distributor.

Majors pursuing the Advertising sequence are required to spend no fewer than five hours a week during one semester soliciting advertising accounts for the campus daily, writing copy, and otherwise servicing their accounts, and making collections for the advertising sold.

Some students get additional practice by working part-time for Morgantown dailies or by taking vacation positions on newspapers of their home communities. Majors are especially urged to obtain vacation work on a good weekly or daily newspaper during the summers that precede their junior and senior years.

Under a formal state-wide intern training program which became effective in 1959, students with at least a 2.0 average in all subjects and a 3.0 average in journalism courses, or who have special consent, are employed by West Virginia newspapers for a 10-12 week period during the summer at a salary of $50.00 per week. These internships are available to students in the summers preceding their junior and senior years.

Training for students preparing for jobs in radio and television is conducted along workshop lines. In their radio labs, the students are responsible for gathering and writing the news for news programs and their work is evaluated during class meetings in Martin Hall. While the main purpose of this work is to develop writing ability, meaning the ability to present information in a conversational manner, students also have an opportunity to acquire some broadcasting experience.

Most of the students' television work involves production. When they have mastered the principles of motion picture photography, they apply TV techniques to these principles in "dry run" assignments. Later, they have an opporunity to shoot regional news events for television stations requesting film coverage. Film editing and splicing techniques are stressed during the lab periods.

The School received grants totaling $2,500 in 1962, 1963, and 1964 from *Reader's Digest*. The last grant enabled students to obtain experience in reporting precinct results in Kanawha County during the 1964 presidential election. Additionally, the money has been used for travel expenses incurred by the Feature Writing and Editorial-Law of the Press classes in researching and writing special articles.

PLACEMENT OF GRADUATES

During the last four decades, alumni who completed all or most of the professional courses in journalism have encountered little difficulty in finding desirable positions. Although the School cannot guarantee positions to graduates, it is glad to assist them in learning of openings and making contact with employers. To this end it maintains without charge a placement register for both current and past graduates. Students and alumni also are invited to make free use of the University Placement Service.

JOURNALISM ORGANIZATIONS

Journalism organizations of which eligible students may become members are: *Theta Sigma Phi*, professional organization for women in journalism and communications; *Sigma Delta Chi*, professional journalistic society; *Alpha Delta Sigma*, professional advertising honorary; and *Kappa Tau Alpha*, national journalistic scholarship society, to which about 10 per cent of the highest-ranking majors are elected each year. Many other University organizations are also open to journalism students with special interests outside the field of journalism.

COURSES OPEN TO NON-JOURNALISM MAJORS

The School of Journalism desires to share its knowledge of the philosophy, history, principles, practices, and techniques of journalism and mass communications with all University students, regardless of major study, who desire to elect courses or to minor in the field.

Many journalism courses are open to non-journalism majors.

PROFICIENCY IN ENGLISH

Regular students of the University or transfers from other colleges and universities are expected to speak and write the English language with a marked degree of correctness. This means that in their English composition courses they should have achieved a standing of approximately "B" or higher. If upon entering the School of Journalism a student is found deficient in English he will be required to take one or more additional courses in fundamental composition.

Students who complete English 2 with less than a "C" grade are required either to retake English 2 and establish a "C" or better grade, or take an English proficiency examination. Complete details concerning the English proficiency requirement may be found on page 46 of this bulletin.

TYPEWRITING

Before or soon after entering the University, a student planning to become a journalism major should learn the touch system of typing. From the beginning every reporter is expected to submit copy in neat typewritten form. If the reporter cannot demonstrate such typing ability, he may be asked to withdraw from the reporting course. He will find it advantageous to have his own machine.

PROFESSIONAL RELATIONS AND SERVICES

From 1920 to 1954 the publishers, editors, and other communications workers of West Virginia paid annual visits to the University campus to attend the State Journalism Conference. Among the organized groups participating were the West Virginia Publisher's Association, the West Virginia Associated Press, the West Virginia State Newspaper Council, the West Virginia Industrial Magazine Editors, the West Virginia Broadcasters' Association, the West Virginia Sports Writers' Association, and the West Virginia Intercollegiate Press Association. In 1953 the West Virginia Publishers' Association and the West Virginia State Newspaper Council were dissolved. In their place a modern West Virginia Press Association was organized. The entire faculty of the School of Journalism participates in the annual meetings of the Association, held in various cities throughout the State. The School of Journalism and the University as a whole maintain close relations with workers in the general communications fields, because the School is providing office quarters for the West Virginia Press Association.

In order to perpetuate the names, achievements, and ideals of the State's distinguished editors of the past, the West Virginia Journalism Hall of Fame was instituted in 1935. Elections take place every two years under the sponsorship of the West Virginia Press Association. Suitable memorials are being placed in Martin Hall in a special room designed for the Hall of Fame and exhibits of historical significance.

From the beginning the press of the State has assumed a cordial and cooperative attitude toward professional training for journalism at the University. For many years the State Newspaper Council had among its standing committees one on Educational and Professional Standards and another on School of Journalism Building. The former group interested itself in helping the journalism unit maintain high-grade instruction and offer study inducements such as scholarships to superior young people. The latter concerned itself with ways and means of obtaining still better housing and equipment for the School.

The School of Journalism provides an annual critical service for high school news periodicals and awards various citations of excellence. It also unites with the West Virginia Association of Scholastic Journalism Directors each year in conducting a two-day State Institute of Scholastic Journalism in which the problems of teaching journalism and publishing newspapers and annuals are professionally considered. The Yearbook Seminar is held each spring. Each year the spring meeting of the West Virginia High School Broadcasters' Association also is at the University. In cooperation with the Fine Arts Institute a summer journalism workshop is held for high school students. A workshop for high school journalism teachers and publications advisers is also held in the summer.

THE WEST VIRGINIA FOURTH ESTATESMAN

The *West Virginia Fourth Estatesman* is a periodical published quarterly by the School as a professional public service. Since it was founded in 1941, the *Fourth Estatesman* has disseminated journalistic news and digests of technical and special lectures delivered frequently to the student body of the School. It is sent free to the communications media of the State, to high school journalism teachers, and the School alumni.

COMMITTEE ON SCHOLARSHIP

Messrs. Wilson, Summers and Stewart.

SCHOOL OF JOURNALISM VISITING COMMITTEE

John P. Carr, *President,* MARJA Broadcasting Corporation, Elkins.
John A. Jones, *Director of Public Relations,* Weirton Steel Company, Weirton, *Chairman.*
Ogden Nutting, *Business Manager,* News Publishing Company, Wheeling.
James A. Roberts, *Advertising Manager,* Fostoria Glass Company, Moundsville.
Walter Tetrick, *Publisher, Mineral Daily News-Tribune,* Keyser.

Requirements for the Degree

THE BROAD EDUCATIONAL BACKGROUND

The School of Journalism emphasizes a strong liberal arts background for its students. Curricula are arranged so that students devote approximately 75 per cent of their study to broad liberal arts subjects and 25 per cent to professional courses in journalism.

This philosophy of journalism education is in accord with what appears to be the best current thought in both educational and professional circles, and it is the goal of the American Council on Education for Journalism.

It is enunciated by requiring a minimum of 30 hours, and a maximum of 33, in journalism within the first 128 hours offered for the B.S.J. degree, and by insistence on a "content" field of study as a minor. In addition to learning certain techniques and gaining journalistic knowledge and insights, students in their journalism courses are enabled to synthesize and bring into sharp focus the knowledge gained in all their University studies. The content of at least half their courses in journalism lies well within the area of general knowledge leading to sound citizenship and enriched living, regardless of their future career roles. They develop skills of communication; gain an understanding of the nature of major local, state, national, and world problems and of the role of mass media in the democratic process; learn to evaluate intelligently both news and opinion as expressed through print and broadcast journalism, and in fact, become alert, informed consumers, as well as producers, of news and views upon which decisions are generally made in a democracy.

Among the foundation courses that receive special attention are these: the English language and literature; foreign language; theoretical and applied economics and business administration; national, state, and local government and the governmental systems of foreign countries; American politics and international relations; the problems of management and labor and their social implications; American and European history; philosophy, psychology, and natural science. Persons capable of producing newspapers or broadcasting news events and their interpretation with which today's readers and listeners will be satisfied must be thoroughly informed about all aspects of the modern world. They must also know the art and science of the best journalistic practice.

BACHELOR OF SCIENCE IN JOURNALISM

A candidate who has satisfied all general requirements of the University and who as a regularly enrolled student of the School of Journalism has earned 64 semester hours of credit, of a value specified in the "Scholastic Requirements"

section, and in the subjects listed in one of the professional curricula hereinafter outlined, will be recommended for the degree of Bachelor of Science in Journalism or Bachelor of Science in Journalism Education, provided the combined number of his credits acquired as a pre-journalism student and as a regularly enrolled journalism major totals no fewer than 128.

As a minimum professional requirement, 22-25 of the 64 semester credits earned after the student has enrolled in the School of Journalism must be obtained in journalism subjects. No fewer than 40 of the 64 semester credits shall be obtained in courses numbered between 100 and 300. Further, no student will be permitted to offer fewer than 30 nor more than 33 hours of journalism courses in the 128 semester credits required for the degree.

Students who have earned less than a 2.0 cumulative average may be admitted to the School of Journalism providing their applications are approved by the School's Committee on Scholarship. However, any student earning less than a 2.0 average in a given semester, after admission to the School of Journalism, is automatically placed on probation and limited to a course load of no more than 14 hours the following semester. Failure to meet the scholastic requirements set forth in this bulletin will lead to suspension from the School.

Hours for any course for which a grade of "F" is received are counted in computing the student's grade-point average. *Example*: If a student received "F" in English 1, then repeated the course and received "B," for this work his record would show six semester hours and nine grade points.

MINIMUM AND MAXIMUM WORK

A student, admitted to the School of Journalism, who wishes to carry less than 14 hours of course work in a given semester, must petition the School's scholarship committee for permission to do so. A journalism major may register for no fewer than 14 hours and, normally, no more than 18 hours per semester. To carry 19 hours, a student must have maintained a "B" average or higher during the preceding semester; however, even students with "B" or higher averages must petition the scholarship committee if they wish to carry *more* than 18 hours any semester. Students earning less than a "B" average the preceding semester must petition the committee for permission to carry more than 17 hours any semester.

FOREIGN LANGUAGES

To be eligible for the B.S.J. degree, a News-Editorial, Public Relations, or Radio-Television major must have completed 12 semester hours in one language in college; or he must have offered two units in a foreign language for entrance and must have completed 6 hours in the same language in college, above courses numbered "1" and "2."

An Advertising major may substitute a *Marketing Minor* for the Foreign Language requirement stated above. However, any Advertising major contemplating graduate work is strongly advised to select the foreign language option.

An Agriculture or Science Specialization major may substitute 12 hours of advanced course work in his specialization.

EXEMPTION FROM REQUIREMENTS

Exemption from any professional course because of practical newspaper experience that a student may have had will be granted only after the student has submitted satisfactory evidence as to the nature and quality of the experience. For such exemptions approved advanced courses shall be submitted. Credit toward a degree can be granted for practical work only when it has been done under the supervision of an accredited instructor.

PROFESSIONAL ADVISERS

A staff member serves as adviser in each curriculum with the Dean acting as general adviser for all journalism students. Not only juniors and seniors, but pre-journalism freshmen and sophomores as well, should consult him about all scholastic and curricular problems that may arise.

SCHOLASTIC REQUIREMENTS

Graduates of the School of Journalism are expected to be alert individuals of better-than-average intellectual attainments. It is urged, therefore, that all candidates for a degree aspire to earn at least three times as many grade points as they have credit hours. To be eligible for graduation, a student must earn as a minimum a cumulative average of 2.0 grade points with at least an overall 2.5 average for journalism work, or a minimum of 256 grade points for 128 hours of academic work, if all credit is earned at West Virginia University.

In addition to the general experience each journalism major will obtain on the *Daily Athenaeum* in connection with required or elective courses, no major will be approved for graduation unless during either his junior or senior year he has served for not less than one semester in some editorial or executive capacity on the *Daily Athenaeum*, or unless he has offered in place of this service a substitute project approved by his adviser.

No student will be recommended for the degree unless he has shown to the satisfaction of the faculty that he possesses abilities and qualities which give promise that he can do adequate work in professional journalism.

CORE CURRICULUM REQUIREMENTS

All undergraduates must complete all requirements of the University's Core Curriculum. In addition to requiring students to erase high school deficiencies, the Core Curriculum requires that 12 credit hours be earned from approved courses in each of the three groups listed below, with work being taken in at least two subjects from each group. Concurrent requirements of the School of Journalism, as listed, fulfill all Core requirements, regardless of specialization within the School.

The student should plan to fulfill most Core requirements within his freshman and sophomore years, and fulfill all requirements before his senior year.

Group A (Art, music, foreign languages and literature, literature of the English language, philosophy).

Required by School of Journalism:

English 4 and 6 ..... 6 hr.

Foreign Language ..... 6 hr.

Advertising students may substitute a Marketing minor for the foreign language requirement (see "Minor Field").

Students pursuing a program for Specialization in Agriculture, Science or Physical Education may substitute for the foreign language requirement 12 hours of upper-division work in their selected specialization.

Humanities 1 and 2 ..... 8 hr.

Required for students pursuing Specialization in Agriculture or Sciences, and Advertising students not taking a foreign language.

Art 30 and Music 10 are required in the High School Journalism Teacher curriculum ..... 6 hr.

Group B (Economics, history, psychology, political science, sociology).

Required by School of Journalism:

History 1 and 2 ..... 6 hr.

History 1 and 2 not required of students pursuing Specialization in Agriculture or Science, or of Advertising students not taking a foreign language. Students in all other areas of journalism may select either History 1 and 2 or Humanities 1 and 2.

History 52 and 53 ..... 6 hr.

Economics 51 and 52 ..... 6 hr.

Economics 52 not required in High School Journalism Teacher curriculum.

Psychology 1 ..... 3 hr.
Not required in Agriculture or Sciences specializations, or High School Journalism Teacher curriculum.
News-Editorial and Radio-Television students may substitute Philosophy 4 for this requirement.

Political Science 2 ..... 3 hr.
Political Science 120 is required in Public Relations curriculum instead of Political Science 2. Political Science 120 is required in the Radio-Television curriculum *in addition* to Political Science 2.

Group C (Biology, chemistry, geology, mathematics, physics).

Required by the School of Journalism:

Natural Science (biology, chemistry, geology or physical science) ..... 8 hr.
Selection limited to biology or physical science in High School Journalism Teacher curriculum.

Elective from Group C courses ..... 4 hr
Mathematics 3 and 4 (6 hr.) required for students pursuing Specialization in Agriculture or Sciences.

PRE-JOURNALISM STUDIES

Candidates for the degree of Bachelor of Science in Journalism are registered in the College of Arts and Sciences until they have earned at least 58 semester hours of college credit. Studies during the freshman and sophomore years are designed so that the student may fulfill nearly all University Core Curriculum requirements, while at the same time exposing himself to the varied areas of study so that he may intelligently select a minor field and a journalism specialization upon entering his junior year.

FIRST YEAR	*Hr.*	SECOND YEAR	*Hr.*
Journalism 1	2	Journalism 18	3
Journalism 2*	1	Journalism 19	3
English 1 and 2	6	Military or Air Science 3 and 4	4
Military or Air Science 1 and 2	4	Physical Education (Women only)	2
Physical Education	2	Core requirements	
Core requirements			

*Not required of students pursuing Specialization in Agriculture or Science.

THE MINOR FIELD

To meet the requirements for a minor, a student must earn at least 15 semester credits in some subject other than journalism, 12 of which must be in courses numbered 100-199 or 200-299. For students pursuing two minors simultaneously, the requirement in each area is at least 12 semester credits, of which 9 must be in upper-division courses (those numbered above "100"). The first minor must be in a "content" area of study. Radio-television majors are urged to make speech one of their two minors.

Minor fields especially recommended for all journalism students are economics, history, English, political science, and sociology. In addition, commerce is recommended for advertising and public relations majors. Agriculture, the natural sciences, life sciences, commerce, or engineering are recommended for agriculture and science specialization majors.

Students in other areas of study who desire to minor or take extensive electives in journalism are welcome and will be given special counseling to obtain the information and skills which they desire. Such students should consult with both their own advisers and the Dean of the School of Journalism regarding the journalism courses in which they are to enroll.

Journalism Studies

The School of Journalism offers five principal and three variable curricula designed to equip students for the numerous branches of journalistic practice and teaching—areas where journalistic training is both desirable and necessary preparation.

ADVERTISING CURRICULUM

Since this field is growing and greatly diversified, Advertising students need both a general, overall knowledge and the opportunity to direct their studies toward the specialized area in which they intend to seek employment.

The advertising student, therefore, may direct his studies during his senior year toward (1) advertising media, (2) print advertising, or (3) radio and television advertising.

THIRD YEAR	Hr.	FOURTH YEAR	Hr.
Marketing 111	3	Journalism 108	2
Marketing 115	3	Journalism 114	2
Journalism 110	2	Journalism 201	1
Journalism 113	3	Journalism 239	2
Journalism 115	2	Specialization*	3
Core requirements		Electives as needed	
Electives as needed			

*During the senior year, the advertising student will select one of the following courses for his specialization: Journ. 204 (Markets and Media), Journ. 210 (Advertising Production), or Journ. 116 (Radio-Television Advertising).

Advertising majors will elect from 5-8 additional hours in journalism from the following courses: Journ. 118, 119, 120, 122, 124, 170, 212, 227, and 230.

NEWS-EDITORIAL CURRICULUM

This sequence is intended primarily for those who wish to prepare themselves for writing or editing positions with newspapers or periodicals. A special adaptation of this curriculum is made for those who wish to develop their writing talents and background in agriculture, the sciences, or physical education.

THIRD YEAR	Hr.	FOURTH YEAR	Hr.
Political Science 120*	3	Journalism 128***	2
Journalism 118	3	Journalism 227***	3
Journalism 119**	3	Journalism 230***	2
Journalism 120**	2	Journalism 235***	2
Journalism 201	1	Electives as needed	
Core requirements			
Electives as needed			

*Students with Specialization in Agriculture or Science may elect either Pol. Sci. 120 or Psychol. 115.

**Not required of students pursuing Specialization in Agriculture or Science.

***Not required of students pursuing Specialization in Agriculture, Science, or Physical Education.

News-Editorial majors will elect from 3-6 additional hours in journalism from the following courses: Journ. 108, 110, 113, 122, 123, 170, 212, and 220.

Specialization in Agriculture, Sciences

With this curriculum specialization, a student may obtain proficiency in agriculture reporting, scientific writing, and journalism while acquiring extensive knowledge in specialized areas, such as agriculture, home economics, the medical sciences, the natural and physical sciences, mathematics, or commerce.

REQUIREMENTS, AGRICULTURE

Students will follow the News-Editorial sequence as amended by footnotes, and will take the following additional courses: Journ. 110 and 213, Speech 11, Agr. 11, 12, 51, 52, Agr. Statistics 101, and 12 additional hours of agriculture electives.

Ten hours of journalism electives will be chosen from the following courses: Journ: 113, 119, 120, 122, 123, 124, 125, 212, and 230.

Summary:

Total hours required in non-journalism subjects	78-83
Total hours for Journalism Major	30
Total hours for Agriculture Specialization	25
	133-138

REQUIREMENTS, SCIENCES

Students will follow the News-Editorial sequence as amended by footnotes, and will take the following additional courses: Journ. 110 and 113, Speech 11, plus 23-26 hours of electives in specialization as determined through consultation with the journalism adviser.

Ten hours of journalism electives will be chosen from the following courses: Journ. 119, 120, 122, 123, 124, 125, 128, 212, 213, and 230.

Summary:

Total hours required in non-journalism subjects	79-85
Total hours for Journalism Major	30
Total hours for Science Specialization	23-26
	132-141

Specialization in Physical Education

This program is designed to provide special studies in physical and health education for journalism majors who desire fundamental and extensive knowledge that will enable them to serve in the fields of sports reporting, editing, and radio-television announcing, or as advertising writers, salesmen, and managers.

REQUIREMENTS, PHYSICAL EDUCATION

Students will follow the News-Editorial sequence as amended by footnotes, and will take the following additional courses: Phys. Educ. 51, 55, 56, 71, 121, 278, eight hours additional physical education electives, Pol. Sci. 120, Speech 120, Zool. 271, Psychol. 115, and Journ. 113.

PUBLIC RELATIONS CURRICULUM

Designed for students who wish to prepare for work in a public relations firm or public relations department, the curriculum also prepares students for such positions as information specialist in business, industry, organized labor, government, education, welfare agencies, or the armed services.

THIRD YEAR	*Hr.*	FOURTH YEAR	*Hr.*
Journalism 110	2	Economics 115	3
Journalism 113	3	Journalism 120	2
Journalism 118	3	Journalism 201	1
Political Science 120	3	Journalism 212	3
Psychology 216*	3	Journalism 213	2
Speech 11	3	Journalism 230	2
Core requirements		Electives as needed	
Electives as needed			

*Any one of the following may be substituted for Psychol. 216: Pol. Sci. 232, Public Opinion and Propaganda; Psychol. 115, Industrial Psychology; Psychol. 229, Abnormal Psychology; Psychol. 242, Advanced Social Psychology; Sociol. 205, Urban Sociology; or Sociol. 250, Human Relations in Industry.

Public Relations majors will elect from 3-6 additional hours in journalism from the following courses: Journ. 119, 122, 123, 124, 125, 220, and 235.

RADIO-TELEVISION CURRICULUM

Students who want to work in the news and information areas in the broadcasting field should follow this curriculum and should pursue a double minor in political science and speech. Course offerings are geared to the needs of those preparing for such positions as radio-TV news reporter, newscaster, and news executive; TV news cameraman; wire service radio editor; and station salesman, or commercial copy writer.

THIRD YEAR	Hr.	FOURTH YEAR	Hr.
Journalism 118	3	Journalism 116	2
Journalism 120	2	Journalism 124 and 125	4
Journalism 122 and 123	4	Journalism 201	1
Core requirements		Political Science 120	3
Electives as needed		Electives as needed	

Radio-Television majors will elect 5-8 additional hours in journalism from the following courses: Journ. 113, 119, 128, 212, 213, 220, 227, 230, and 235.

HIGH SCHOOL JOURNALISM TEACHER CURRICULUM

A program for prospective high school journalism teachers, this curriculum enables students to obtain the degree of Bachelor of Science in Journalism Education and also qualify for a first-class professional certificate in West Virginia with teaching fields in English and social studies, and a minor teaching field in journalism, Grades 7-12, by taking the following courses in addition to the pre-journalism studies program:

First and second years: Soc. Sci. 1 and 2 (8 hr.); English 3 and 4, or 163 and 164 (6 hr.); English 5 and 6 (6 hr.); and Educ. 105 (3 hr.); Core requirements.

THIRD YEAR	Hr.	FOURTH YEAR	Hr.
Journalism 110 and 120	4	Literature	6
Journalism 118 and 119	6	History 150 or 250	3
Education 101	1	Journalism 201	1
Education 106	3	Journalism 212	3
Education 109 or approved elective	2	Journalism 215	2
Speech 3, 6, 11, or 29	3	Journalism 227	3
Sociology 1 or 104	3	Journalism 230 and 235	4
Health Education 102	2	Social studies, upper-division, elective	3
Geography 7 or 109	3	Education 124	6
Core requirements		Education 120	4
		Education 150-170	2

MINOR IN TEACHER TRAINING IN JOURNALISM FOR NON-JOURNALISM MAJORS

For students in other schools and colleges following one of the University's teacher-training programs, the School of Journalism has set up a teaching minor in journalism. The program is intended for persons who plan to be advisers for high school newspapers and yearbooks as well as teachers.

This minor requires a minimum of 16 hours in journalism (only 14 hr. additional for those whose first teaching field is English, since Journ. 215 is included in that program). It includes the following courses:

Required Courses

	Hr.		Hr.
Journ. 1—Introduction to Mass Communications	2	Journ. 215—High School Journalism	2
Journ. 18—News Writing	3	Journ. 227—History of Journalism	3
Journ. 19—Copy Editing and Makeup	3		
Journ. 113—Principles of Advertising	3		

Recommended Courses for Additional Credit

Journ. 108—The Community Newspaper 2
Journ. 110—Typography and Printing Processes 2
Journ. 120—News Photography 2
Journ. 212—Public Relations 3
Journ. 220—Newspaper and Magazine Article Writing 2
Journ. 230 and 235—Editorial and Law of the Press 4

ELECTIVE COURSES IN JOURNALISM FOR STUDENTS IN TEACHER-TRAINING PROGRAMS

Students in other schools and colleges following one of the University's teacher-training programs may elect any of the courses in journalism *listed above*. Journ. 18 is a prerequisite for Journ. 19. Hist. 52 and 53 are prerequisites for Journ. 227. All other courses may be taken without prior journalism study.

PROGRAM FOR PROSPECTIVE JOURNALISM TEACHERS IN COLLEGES AND UNIVERSITIES

The student should obtain the Bachelor of Science in Journalism degree, then acquire a master's degree in the field, either before or after obtaining some practical experience with the media. The doctorate is essential to fullest advancement.

Courses of Instruction

The following system of course numbering is employed: Courses 1-99, intended primarily for freshmen and sophomores; courses 100-199, intended primarily for juniors and seniors; 200-299, advanced courses open to juniors, seniors, and graduate students.

1. Introduction to Mass Communications. I, II, S. 2 hr. Recommended for all University students; required of journalism majors. Role of the mass communicator in developing the political, social, and economic fabrics of a democratic society. Organization and function of newspapers, magazines, broadcast stations, and other principal media of mass communications, including the role of advertising.

2. Lectures in Journalism. II. 1 hr. Open to all University students; required of journalism majors. A series of one-hour weekly addresses by specialists representing the principal mass communications industries and professions.

18. News Writing. I, S. 3 hr. PR: English 1 and 2, with an average of 2.5 or higher for the two courses, or consent. Open to all University students; required of all journalism majors. Two lec. and a 2-hr. lab-demonstration period. Fundamentals of news gathering and writing.

19. Copy Editing and Make Up. II. 3 hr. PR: Journ. 18. Required of all journalism majors. Two lec. and a 2-hr. lab-demonstration period. The editing of news copy, headline writing, and introduction to page make up.

108. The Community Newspaper. I. 2 hr. Open to all University students; required in Advertising curriculum. Fundamental problems and techniques in the operation and management of smaller community newspapers. One lec. and 2 lab. hours.

110. Typography and Printing Processes. I, II. 2 hr. Open to all University students; required in Advertising, Public Relations, and Agriculture or Science Specialization curricula. Historical development of type, printing processes, and offset presses and Linotype machine. Identification of type and its application to advertising, newspaper, and magazine production.

113. Principles of Advertising. I, II, S. 3 hr. Open to all University students; required in Advertising, Public Relations, and Agriculture or Science Specializa-

tion curricula. Two lec. and a 2-hr. lab. period. Survey of the function of advertising in the American economic system for national and retail advertisers. Study of individual advertising and media, copy and layout problems, appeals, research, production, schedules, federal and state laws affecting advertising, and ethics. Practical laboratory work in writing and layout of advertisements.

114. Newspaper Advertisement Selling. I, II. 2 hr. PR: Journ. 113. Required in Advertising curriculum. One conference and 5 lab. hours arranged. Selling of space, preparation of retail copy, and servicing local newspaper accounts for the *Daily Athenaeum*. Students handle specific assignments, develop new accounts, and apply the mechanics and psychology of space-selling. Enrollment restricted.

115. Advertising Copy and Layout. II. 2 hr. PR: Journ. 113 or Marketing 120. Required in Advertising curriculum. Two lec. and a 2-hr. lab. arranged. Applying tested advertising methods to the preparation of merchandise copy; layout design; production of publication advertising. Emphasis on sales appeals, attention factors, layout planning, illustrations, copy writing, copy testing, and production methods and problems for retail and national advertisers.

116. Radio and Television Advertising. I. 2 hr. Open to all University students; required in Radio-Television curriculum. Historical development of radio and TV as advertising media, including rates, listener surveys, sponsorship problems, and promotion. Writing of radio and television commercials, programs, and preparation of sales and sales promotion plans for stations, national and retail advertisers. Federal regulations affecting broadcast media.

118. Reporting. I, II. 3 hr. PR: A grade of "C" or higher in Journ. 18. Required of majors in all sequences except Advertising. Nine laboratory hours on the *Daily Athenaeum* and one critique hour.

119. Advanced Editing and Make Up. I, II. 3 hr. PR: A grade of "C" or higher in Journ. 19. Required of majors in the News-Editorial curriculum. Nine laboratory hours on the *Daily Athenaeum* and one critique hour.

120. News Photography. I, II, S. 2 hr. Open to all University students; required in News-Editorial, Public Relations, and Radio-Television curricula. One lec. hour, 1 demonstration hour, and one 2-hr. lab. An introduction to basic photographic principles. Students use several types of cameras, and learn to develop, print and enlarge. No laboratory fee is charged for this course, but each student is required to purchase a photography kit the cost of which will be between $10.00 and $15.00. The kit contains all the film and photographic paper he will use during the course; chemicals are provided by the School.

122. Radio and Television Reporting. I. 2 hr. PR: Journ. 18 or consent. Required in Radio-Television curriculum. A lab. course providing training in skills required in the writing and broadcasting of news; practice (including use of tape recorder) in reporting and editing news for programs with various formats. One lec. and 3 lab. hours.

123. Radio and Television Reporting. II. 2 hr. PR: Journ. 122 or comparable experience, and consent. Required in Radio-Television curriculum. A continuation of Journ. 122. Practice in getting, writing, and editing local and regional news for broadcast. One lec. and 3 lab. hours.

124. Television News Photography. I. 2 hr. PR: Journ. 120 or consent. Required in Radio-Television curriculum. Theory and practice in basic motion picture techniques, with emphasis on the special requirements of television news programs. One lec. and 3 lab. hours.

125. Television Film Reporting and Editing. II. 2 hr. PR: Journ. 124. Required in Radio-Television curriculum. Production of film clips for news programs on regional television stations; practice in editing and integration of visual materials for TV newscasts. One lec. and 3 lab. hours.

128. Reporting of Public Affairs. II. 2 hr. PR: Journ. 18 or comparable experience and consent. Required in News-Editorial curriculum. Reporting of routine and extraordinary activities of municipal and county government and of miscellaneous civic areas. Study of trends in local government structure. Visits to courts and public offices. A consideration of media responsibility as interpreters of public affairs.

170. Mechanical Composition. II. 1 hr. Open to all University students. The fundamentals of operation, care and maintenance of the Linotype. The use of mechanically produced type in newspapers and other publications. Special problems in mechanical composition. One lec. and 1 lab hour.

201. Interpreting Current Events. S. 1 hr. Open to all University juniors, seniors, and graduates. A study of national and world news developments, their backgrounds and their meanings.

203. Media Management and Promotion. I, II, S. 3 hr. Advertising seniors must take Journ. 203, Journ. 204 or Journ. 210. Problems, functions, and responsibilities in communications media organization, operation, management, and promotion. Special emphasis on case-study of media management and promotion in the Appalachian area.

204. Advertising Markets and Media. I, II, S. 3 hr. Advertising seniors must take Journ. 203, Journ. 204 or Journ. 210. A study of advertising planning, buying, and scheduling by advertisers, media, and advertising agencies on national and local levels. Seminar discussions and assignments with special emphasis on problems related to Appalachian markets and media.

210. Advertising Production. I, II, S. 3 hr. PR: Journ. 110. Advertising seniors must take Journ. 203, Journ. 204 or Journ. 210. A study and application of the processes and operations involved in carrying print advertising from the finished layout through production into print. Study includes the techniques of art production, advanced typography, and make up. The student must acquire certain tools and supplies for laboratory work. Expense should not exceed $15.00.

212. Public Relations. I, II, S. 3 hr. Open to all University students; required in Public Relations curriculum. Principles, problems, and practices concerned in the relationships of businesses, industries, and non-profit organizations with their respective publics; practice in the evaluation of existing PR programs and their refinement for further effectiveness.

213. Industrial Journalism. II. 2 hr. Open to all University students; required in Public Relations curriculum. A study of the relations between industry and its many publics, with emphasis on internal and external company publications as public relations media. Extensive practice in planning and writing materials and in page make up for industrial publications and trade journals.

215. High School Journalism. II, S. 2 hr. Open to all University students. A survey of scholastic publications problems and techniques; suggested methods of instruction.

220. Newspaper and Magazine Article Writing. II. 2 hr. Open to all University students. A seminar-type course devoted to the writing, editing, and marketing of features, including reviews and critical articles.

227. History of Journalism. I, S. 3 hr. PR: Hist. 52 and 53. Open to all University students; required in News-Editorial curriculum. A study of the impact of the American press on the nation; the development of today's communications media from the beginnings in 17th Century England and in the American colonies; an examination of the great names in journalism from the standpoint of their contributions to today's journalism; freedom of the press and its current implications.

230. Editorial and Law of the Press. I. 2 hr. Open to all University students; required in News-Editorial and Public Relations curricula. Writing and analyzing editorials and columns; a study of the editorial page and editorial ethics, problems and policies; a study of the vital elements of libel, privacy, contempt, and other phases of law of the press.

235. Editorial and Law of the Press. II. 2 hr. Open to all University students; required in the News-Editorial curriculum. A continuation of Journ. 230.

239. Seminar in Advertising-Management Problems. I. 2 hr. PR: Senior standing and major or minor in Advertising. Required in Advertising curriculum. Current trends in advertising, merchandising, and distribution problems. Students develop individual projects in some phase of advertising or management.

241. Journalism Problems. I, II, S. 1-3 hr. For seniors and graduates. An intensive study, independently conducted, of a specialized area or problem in journalism to be approved by the Dean.

242. Advanced Journalism Problems. I, II, S. 1-3 hr. A continuation of Journ. 241.

243. International Communications. I. 3 hr. International wire services. Coverage of world news in newspapers of the United States and foreign countries; and desirability of a free flow of information to and from the United States. United Nations efforts to lower news barriers will be examined.

The Division of Military Science and The Division of Aerospace Studies

Complete details concerning the following information for the Division of Military Science and Division of Aerospace Studies is given on pages 47-49 of this bulletin: requirements, curriculums, allowances, deposits, exemptions, ROTC financial assistance program, organization, and ROTC bands.

MILITARY SCIENCE FACULTY AND STAFF

Edwin W. Reynolds, Col., B.S., *Professor of Military Science* (1962).
Ernest Lee Ackiss, Capt., B.A., *Associate Professor of Military Science* (1963).
Thomas B. Cotton, Capt., B.S., *Associate Professor of Military Science* (1964).
Bernard F. Doran, Jr., S.Sgt., *Librarian in Military Science* (1964).
Edward Burton Findley, M.Sgt., *Supply Sergeant in Military Science* (1959).
Harvey H. Hartwig, Lt. Col., B.S., *Associate Professor and Executive Officer of Military Science* (1962), 1957.
John Curtis Kite, Capt., B.S.M.E., M.S., *Associate Professor of Military Science* (1963).
Clarence O. Light, Jr., Capt., B.S., *Associate Professor of Military Science* (1964).
Robert Loren McCourt, SFC, *Assistant Supply Sergeant in Military Science* (1963).
Frederick H. Mitchell, Capt., B.A., *Associate Professor of Military Science* (1964).
Francis F. Orchard, M.Sgt., *Coach, Rifle Team* (1964).
Albert John Schwing, Jr., SFC, *Chief Clerk in Military Science* (1960).
Gene B. Sewell, SFC, *Instructor in Military Science* (1963).
Wayne Eugene Shaffer, Capt., B.A., *Associate Professor of Military Science* (1962).
Robert B. Snider, *Sergeant Major in Military Science* (1963), 1959.
Gene St. Clair, M.Sgt., *Instructor in Military Science* (1963).
Victor S. Vierra, Capt., A.B., *Associate Professor of Military Science* (1963).
Wesley Conway Whitmore, Capt., B.A., *Associate Professor of Military Science* (1963).

AEROSPACE STUDIES FACULTY AND STAFF

Jan Walter Janssen, Lt. Col., B.S., *Professor of Aerospace Studies* (1962).
Arthur Charles Buck, B.A., M.A., *Sergeant Major in Aerospace Studies* (1961).
Brent Alden Cool, Capt., A.B., B.S., *Assistant Professor of Aerospace Studies* (1962).
George Edward Cullen, Jr., Capt., A.A., B.S.J., *Assistant Professor of Aerospace Studies* (1961).
Alvie R. Fortney, S.Sgt., *Administrative Assistant in Aerospace Studies* (1964).
John Delbert Hill, M.Sgt., *Supply Custodian and Administrative Assistant in Aerospace Studies* (1962).
William Lester Musladin, Maj., B.S., M.S., *Assistant Professor of Aerospace Studies* (1962).
Benjamin Sonnenschein, Lt. Col., B.S., *Assistant Professor of Aerospace Studies* (1962).
Nathan H. Thomas, Capt., B.S., *Assistant Professor of Aerospace Studies* (1964).
Larry W. Unger, A1c, *Administrative Assistant in Aerospace Studies* (1964).
Herbert Abraham Veach, T.Sgt., *Administrative Assistant in Aerospace Studies* (1961).
Martin Russell Wade, Jr., B.S., *Assistant Professor of Aerospace Studies* (1963).

Courses of Instruction

BASIC COURSE—FIRST YEAR, 2 hr. (Army)

MILITARY SCIENCE 1. Leadership Laboratory; Military Theory and Techniques; Individual Weapons; Organization of the Army; 4 hr. per week during the first half of the semester; 2 hr. per week during the second half of the semester.

MILITARY SCIENCE 2. Leadership Laboratory; U. S. Army and National Security; Counterinsurgency Training; Nuclear Weapons Affects. 2 hr. per week during the first half of the semester; 4 hr. per week during the second half of the semester.

BASIC COURSE—FIRST YEAR (Air Force)

AEROSPACE STUDIES 1. I. 2 hr. An introductory course exploring the causes of conflict in the world today, the relationship of military power to that conflict and a comparison of different political philosophies; Leadership Laboratory; 4 hr. per week during the first half of the semester; 2 hr. per week during the second half of the semester.

AEROSPACE STUDIES 2. II. 2 hr. A discussion of the military and non-military types of conflict; our organization for national security with emphasis on the organization, doctrine and operational concepts of the United States Air Force; Leadership Laboratory; 2 hr. per week during the first half of the semester, 4 hr. per week during the second half of the semester.

BASIC COURSE—SECOND YEAR, 2 hr. (Army)

MILITARY SCIENCE 3. Leadership Laboratory; Map Reading; Small Unit Tactics; 4 hr. per week during the first half of the semester; 2 hr. per week during the second half of the semester.

MILITARY SCIENCE 4. Leadership Laboratory; American Military History; 2 hr. per week during the first half of the semester; 4 hr. per week during the second half of the semester.

BASIC COURSE—SECOND YEAR (Air Force)

AEROSPACE STUDIES 3. I. 2 hr. World Military Systems. A comparison of the mission, organization, functions, and characteristics of free world land, naval, and air forces. Includes a general study of weapon systems and their employment, awareness of developmental trends, changing concepts of force employment, and the place of these forces in allied regional security organizations; Leadership Laboratory; 4 hr. per week during first half of the semester; 2 hr. per week during second half of the semester.

AEROSPACE STUDIES 4. II. 2 hr. World Military Systems. A study of the mission, organization, functions, and characteristics of communist air, land, and naval forces and the characteristics and operations of communist regional security organizations; exploration of the trends in development and employment of military power and the impact of these trends on world affairs; Leadership Laboratory; 2 hr. per week during the first half of the semester; 4 hr. per week during second half of the semester.

ADVANCED COURSE—THIRD YEAR, 3 hr. (Army)*

MILITARY SCIENCE 105. Leadership Laboratory; Leadership; Military Teaching Methods; Branches of the Army; 3 hr. per week.

MILITARY SCIENCE 106. Leadership Laboratory; Small Unit Tactics; Counterinsurgency; 3 hr. per week.

*An elective 3-hour non-military subject is required to be taken during either the first or second semester. Elective subjects may be chosen from the following general academic areas: 1. Effective communications; 2. Science comprehension; 3. General psychology; 4. Political development and political institutions.

ADVANCED COURSE—THIRD YEAR (Air Force)

Aerospace Studies 105. I. 3 hr. PR: Basic Course or equiv.** Growth and Development of Aerospace Power. A survey course describing the nature of war, development of airpower in the United States, and Air Force concepts, doctrine, and employment; Leadership Laboratory; 3 class hours, 1 Leadership Laboratory hour per week.

Aerospace Studies 106. II. 3 hr. PR: Aerospace Studies 105 or consent. Growth and Development of Aerospace Power. Astronautics and space operations, the future development of aerospace power, and the United States space programs, vehicles, systems and problems in space exploration; Leadership Laboratory; 3 class hours, 1 Leadership Laboratory hour per week.

ADVANCED COURSE—FOURTH YEAR, 3 hr. (Army)*

Military Science 107. Leadership Laboratory; Role of the U. S. in World Affairs; Command and Staff; Estimate of the Situation and Combat Orders; Army Administration; 3 hr. per week.

Military Science 108. Leadership Laboratory; Logistics, Supply Management; Military Law; Map Reading Review; Service Orientation; 3 hr. per week.

ADVANCED COURSE—FOURTH YEAR (Air Force)

Aerospace Studies 107. I. 3 hr. PR: Aerospace Studies 105 and 106 or consent. Intensive study of contemporary world politics (Political Science elective) and seminar of leadership and career opportunities in the Air Force; Leadership Laboratory; 5 hr. per week.

Aerospace Studies 108. II. 3 hr. PR: Aerospace Studies 105, 106, and 107 or consent. Modern power politics and American foreign relations (Political Science elective); seminar on the junior officer in the Air Force; Leadership Laboratory; 5 hr. per week.

**Equivalent credit may be granted by the Registrar of the University and the Professor of Aerospace Studies, on the basis of prior military service or ROTC training other than courses in Aerospace Studies taken at this University.

The School of Physical and Health Education, Recreation, and Safety

FACULTY

Ray Oscar Duncan, Ed.D., *Dean and Professor of Physical Education* (1952).

William Quentin Barnette, M.A., *Assistant Professor of Physical Education and Freshman Basketball Coach* (1950).

Charity White Beto, M.S., *Associate Professor of Physical Education* (1957), 1946.

Kittie Jean Blakemore, M.S., *Assistant Professor of Physical Education* (1964), 1960.

William Alfred Bonsall, M.S., *Assistant Professor of Physical Education and Gymnastics Coach* (1958), 1950.

Robert Nathan Brown, A.B., *Assistant Professor of Physical Education and Director of Intercollegiate Athletics* (1954), 1950.

Wincie Ann Carruth, Ph.D., *Professor of Physical Education and Chairman of Department of Physical Education for Women* (1957).

Ralph Emerson Chancey, B.S., *Instructor in Physical Education and Assistant Football Coach* (1964).

Earl Eugene Corum, M.S., *Assistant Professor of Physical Education and Head Football Coach* (1960), 1950.

Russell Joseph Crane, M.S., *Instructor in Physical Education and Assistant Football Coach* (1952).

Charles Gilbert Donaldson, M.S., *Instructor in Physical Education and Assistant Football Coach* (1956).

Philip Barnard Donley, B.S., Cert.Phys.Ther., *Instructor in Physical Education and Assistant Trainer* (1960).

Grace Margaret Griffin, A.M., *Professor Emeritus of Physical Education* (1957), 1923.

Albert C. Gwynne, M.S., *Assistant Professor of Physical Education and Head Trainer* (1946), 1934.

Galen Samuel Hall, B.S., *Instructor in Physical Education and Assistant Football Coach* (1964).

Stephen Harrick, M.A., *Associate Professor of Physical Education and Coach of Baseball and Wrestling* (1955), 1924.

John William Hesen, M.D., *Assistant Professor of Physical Education and Athletic Team Physician* (1959), 1957.

Frederick John Holter, Ph.D., *Professor of Physical Education and Chairman of Department of Health Education and Chairman of Graduate Studies* (1948), 1947.

Beatrice Hurst, M.A., *Associate Professor of Physical Education* (1951), 1928.

Joe McKee Hutchison, Jr., M.S., *Assistant Professor of Recreation* (1961), 1957.

Robert L. Lochmueller, M.S., *Instructor in Physical Education and Assistant Basketball Coach* (1961).

Jack Stoner Lowder, M.Ed., *Instructor in Physical Education and Swimming Coach* (1964).

George Smith King, Jr., M.S., *Instructor in Physical Education and Head Basketball Coach* (1960), 1958.

S. Samuel Maurice, M.S., H.S.Dir, *Assistant Professor of Physical Education; Director of Intramural Athletics; Soccer Coach* (1958).

Samuel John Morris, M.D., *Professor Emeritus of Physical Education* (1955), 1912.

Robert Harold Patton, B.S., *Instructor in Physical Education and Assistant Football Coach* (1964).
Mary Jane Pearse, M.S., *Instructor in Physical Education* (1961), 1958.
Stanley Edward Romanoski, M.S., *Instructor in Physical Education and Coach of Track Athletics* (1957).
John Gustave Scherlacher, M.Ed., *Professor of Recreation and Chairman of Department of Recreation* (1960), 1947.
John Semon, M.S., *Associate Professor of Physical Education and Chairman of Department of Physical Education for Men* (1955), 1943.
John Edward Shockey, B.S., *Instructor in Physical Education and Assistant Football Coach* (1960), 1950.
Martha Thorn, M.S., *Instructor in Physical Education and Supervisor of Intramural Sports for Women* (1962), 1960.
David Ernest Tork, B.S., *Instructor in Physical Education; Assistant Director of Development* (1964), 1963.
Patrick Anthony Tork, M.S., *Professor of Physical Education and Assistant to the Dean; Assistant to the Director of Athletics* (1960), 1943.
Richard M. Ware, M.A., *Instructor in Physical Education and Assistant Football Coach* (1961).
Mary Katherine Wiedebusch, B.S., *Instructor in Physical Education* (1955).
Charles Peter Yost, Ph.D., *Professor of Physical Education and Chairman of Department of Safety Education* (1963), 1946.

General Information

OBJECTIVES

The Division of Physical Education was established in 1928 and became the School of Physical Education and Athletics in 1937. The name was changed to The School of Physical and Health Education, Recreation, and Safety in 1960.

The objectives of the School are:

1. To conduct a general program of physical education for University students.
2. To provide professional preparation for careers in physical education, athletic coaching, recreation, health education, safety education, and pre-physical therapy.
3. To provide an intramural activities program for students and faculty.

ORGANIZATION

Department of Physical Education for Men
Department of Physical Education for Women
Department of Recreation
Department of Health Education

FACILITIES

The Field House provides facilities for classes, intramural sports, recreation activities, and intercollegiate athletics. It also contains the administrative offices of the School of Physical and Health Education, Recreation, and Safety.

Elizabeth Moore Hall provides physical education, intramural, and recreation facilities for women students. It also houses the offices of the Department of Physical Education for Women.

Mountainlair, the student activities center, provides facilities for swimming and bowling.

Mountaineer Field is located within the stadium. It has a seating capacity of 35,000 and provides facilities for intercollegiate football and track and field events.

The administrative offices of the Department of Intercollegiate Athletics are also located in the stadium.

Outdoor facilities for the physical education, intramural sports, recreation, and intercollegiate athletics are located in the stadium and on the Evansdals Campus.

INTRAMURALS

A broad intramural sports program for men and women is provided by the School. It is the aim of the intramural program to encourage all students of the University to participate in organized athletic sports and wholesome active recreation. Competition is promoted among student groups and individuals. Groupings such as classes, fraternities, sororities, dormitories, and other nonfraternity units, form the foundation for activities in competitive sports.

STUDENT ORGANIZATIONS

Members of the staff of the School of Physical and Health Education, Recreation, and Safety serve as advisers to student organizations.

Physical Education Major Club

Membership in the Physical Education Major Club is open to all majors and minors in Physical Education and is affiliated with the American Association for Health, Physical Education, and Recreation. The purposes of the Club are to increase interest in the profession and to provide additional professional opportunities.

Dolphin Club

The purposes of Dolphin are to stimulate and maintain interest in swimming and to present a water pageant in the Spring. Membership is open to all University students who pass the swimming requirements that have been determined by the group.

Orchesis

Orchesis, the University dance group, is open to any student who has taken two or more courses in modern dance technique and who can meet the group's requirement in technique and composition. The purpose is to stimulate interest and understanding of modern dance through demonstrations and public performances.

Recreation Major Club

The club is open to those students who are Recreation majors or minors. The club has as its objectives: (1) the raising of professional standards, and (2) keeping informed of developments in the recreation field on state and national levels. The club is an affiliate of the West Virginia Recreation Society and National Recreation Association.

Sigma Delta Psi

Sigma Delta Psi is a national honorary athletic fraternity for men. The object of this organization is to promote physical, mental, and moral development of college students. To qualify for membership, the individual must meet the following requirements. Trials will be afforded candidates each semester and, in addition, records compiled by prospective members in regularly scheduled intramural activities and athletic contests shall be considered valid.

Touche

The fencing club of the University is open to all students. The purpose of the club is to promote interest and to develop the skill of the members through weekly meetings.

GENERAL PROGRAM FOR MEN AND WOMEN

The general program provides an opportunity for students to develop general physical efficiency, skills in sports, dance, and wholesome health and recreation attitudes. Experiences gained in the program provide a basis for participation in intramural and varsity athletics, as well as on- and off-campus recreation.

The courses are specifically designed to: (a) understand the importance of exercise, activity, relaxation, rest, and nutrition to one's physical and mental well-being, (b) understand the relationship of physical education to health, (c) develop an appreciation of the human organism (how the body can move) and the ability and capacity to control and direct these movements with skill and intelligence, (d) understand the meaning of physical fitness and create the desire to develop and maintain it, (e) develop in each student optimum physical fitness and teach skills for lifelong maintenance of physical fitness, (f) develop an appreciation of athletics, sports, and dance common to our culture and the desire to actively engage in these physical activities, and (g) provide an opportunity for students to acquire the skills essential to participate in athletics, sports, dance, and related activities.

Students satisfying the course demands meet the University requirements in Physical Education as a prerequisite for graduation. Those students who are unable to participate in the regular program because of physical handicaps are assigned to the adapted program.

This requirement should be met by the men in their first year of residence and by women in their first two years of residence. Two hours of general program are required for men and four hours for women.

GENERAL PROGRAM COURSES FOR MEN

1. General Program for Men. I. 1 hr. Required of all freshmen in the University (except majors in Physical Education). Students who are found to be physically unable to engage in regular activity will be assigned to an adapted program of physical education recommended by University physicians and under the direction of the staff of the department. All other students will be assigned to the regular program of physical education. These students will be grouped for instruction and organized competition in the following activities: conditioning exercises, tumbling and apparatus, wrestling, golf, swimming, and relays.

2. General Program for Men. II. 1 hr. Required of all freshmen in the University (except majors in Physical Education). Students in the regular program will be grouped for organized competition in the following activities: conditioning exercises, basketball, bowling, handball, volleyball, tennis, and track and field.

GENERAL PROGRAM COURSES FOR WOMEN

General Program for Women. Physical Education 3, Orientation to Physical Education, is required of all freshman women students in the fall semester.

The student should select one course from each of the following groups to complete the 4-hr. requirement:

Group 1—Phys. Ed. 14, 15, 16 ..... (Swimming)

Group 2—Phys. Ed. 5, 11, 17, 18 ..... (Dancing)

Group 3—Phys. Ed. 4, 7, 8, 9, 10, 13, 21, 25 (Individual or Team Sports)

3. Fundamentals of Physical Education. I. 1 hr. Physical self-image, principles of movement, movement patterns in sports and daily living. Required of freshman women.

4. Golf and Bowling. I, II. 1 hr.

5. Ballroom Dance. I, II. 1 hr. Fundamentals of ballroom dancing. For men and women students.

7. Archery. I, II. 1 hr.

8. Recreational Sports. I, II. 1 hr. Badminton, table tennis, deck tennis, and shuffleboard.

9. Team Sports. I. 1 hr. Volleyball and hockey.

10. Team Sports. II. 1 hr. Basketball and softball.

11. Folk Dancing. I, II. 1 hr.

13. Tennis and Bowling. I, II. 1 hr.

14. Elementary Swimming and Diving. I, II. 1 hr.

15. Intermediate Swimming and Diving. I, II. 1 hr.

16. Lifesaving and Water Safety. II. 1 hr. (Opportunity to qualify for American Red Cross Senior Lifesaving Certificate.)

17. Elementary Modern Dance. I, II. 1 hr.

18. Advanced Modern Dance. I, II. 1 hr. PR: Phys. Ed. 17. (Open to men and women).

21. Physical Fitness. I, II. 1 hr.

25. Fencing. I, II. 1 hr.

Physical Education for Elementary Teachers (*Not for P.E. Majors*)

Women students who are planning to teach in elementary grades are required to take the following courses to meet the 4-hr. requirement:

41. Physical Education for Elementary Teachers. I. 1 hr. (W).

42. Physical Education for Elementary Teachers. II. 1 hr. (W).

43. Physical Education for Elementary Teachers. I, II. 2 hr.

Men students who are planning to teach in elementary grades are required to take the following courses:

1. General Program for Men. I. 1 hr.

2. General Program for Men. II. 1 hr.

43. Physical Education for Elementary Teachers. I, II. 2 hr.

STANDING COMMITTEES

Executive: Mr. Duncan (*Chairman*); Miss Carruth, Messrs. Brown, Holter, Scherlacher, Semon, Tork, and Yost.
Undergraduate Curriculum: Miss Carruth (*Chairman*); Messrs. Scherlacher, Semon, Donley, and Yost.
Graduate Curriculum: Mr. Holter (*Chairman*); Miss Carruth, Miss Hurst, Messrs. Scherlacher, Semon, and Yost.
Intramural Activities: Mr. Maurice (*Chairman*); Mrs. Thorn and Mr. Romanoski.
Placement: Mr. Tork (*Chairman*); Miss Hurst and Mr. Semon.
Scholarship: Mr. Yost (*Chairman*); Miss Blakemore, Mr. Hutchison.
Student-Faculty Relations: Mrs. Wiedebusch (*Chairman*); Mrs. Pearse, Messrs. Hutchison, Maurice, and Donley.
Swimming and Water Safety: Mr. Yost (*Chairman*); Miss Blakemore and Mr. Lowder.
Visiting: Mr. Forrest G. Clark (*Chairman*); Dr. Grover Hedrick, Mr. C. S. Kistler, Mrs. J. B. McCue, and Capt. T. A. Welty.

Requirements for Degrees

The degree of Bachelor of Science in Physical Education or the degree of Bachelor of Science in Recreation may be conferred upon any student who satisfies the entrance requirements and offers 128 hours with an average of "C." Candidates for Physical Education degrees must also meet certain School and departmental requirements.

All graduates who entered the University for the first time in September, 1964, or later, must complete the University Core Curriculum requirements in order to graduate (see page 46).

PHYSICAL EDUCATION: REQUIRED AND ELECTIVE SUBJECTS

Of the 128 hours which are required for the degree of Bachelor of Science in Physical Education, at least 45 hours are required in the School of Physical and Health Education, Recreation, and Safety. The remaining hours must be selected from such courses as may be approved by the adviser. A candidate for a degree is advised to make a selection of one of the teaching combinations on page 371 and to complete the number of semester hours required in each training group.

Courses are arranged to meet University requirements for the degree of Bachelor of Science in Physical Education as well as State requirements for teacher certification. The curriculum for the four-year course has been so arranged that consideration is given to various activities which should constitute a well-rounded program of physical education for children and youth. The courses are arranged in twelve groups as follows:

1. Required activity courses in Physical Education for men: Phys. Ed. 5, 51, 52, 53, 54, 55, 56, 121, 130, 131, 132, and for women: 5, 31, 32, 33, 35, 54, 61, 63, 66, 130, 131, 132.
2. Required theory courses in Physical Education for both men and women, unless otherwise indicated are: Phys. Ed. 36 (W),* 71, 175, 176, 177, 180, 191, 278.
3. Required courses in Recreation: Rec. 4.
4. Required courses in Health Education: Health Ed. 2 and 101.
5. Required courses in Safety Education: Safety Ed. 127 (W) and Safety Ed. 181.
6. Required courses in English.
7. Required courses in Science which furnish a background for physical education.
8. Required courses in Education which consider the principles of general education.
9. Required courses in Social Studies.
10. Required courses in Music and Art.
11. Required courses in Military Science and Aerospace Studies.
12. Elective courses.

*Courses marked (M) are open to men; courses marked (W) are open to women; all others are open to both men and women.

A sound and vigorous body is essential to all students who elect this curriculum. Each student must pass a thorough physical examination before he will be allowed to enroll in this program. Special emphasis is placed upon personal and professional qualifications of the student as well as upon a high standard of scholarship.

Student teaching in physical education is available in University High School and in the elementary schools of Morgantown. Opportunity also is provided in University High School for practice coaching of high school athletic teams. Assisting in the General Program in physical education is required of all majors.

All students registered in the School must successfully pass a motor ability test.

Advisers

Designated members of the School's staff serve as advisers for all major students in physical education and recreation.

It is the student's responsibility to know the requirements for graduation, second teaching field, and for certification. All students are urged to acquaint themselves with these regulations immediately.

Recommendation for Certification

The prospective teacher who intends to apply for certification for school service in the State should take care to satisfy requirements for other teaching fields and required courses in Education and Physical Education.

Students who are planning a teaching career must meet the certification requirements that are in effect at their first registration in teaching preparation program. Students may learn of the requirements for certification from the College of Education. Students are urged to become familiar with these certification regulations during their freshman year.

For teacher certification, the student shall be responsible for every registration in a course. The grade-point average shall be computed on *all* work attempted.

Elementary Certification

The elementary curriculum will qualify a student as an elementary classroom teacher. In addition the student will meet certification requirements in physical education, English, and social studies in grades 7-8. By taking Physical Science 2 the student can also qualify to teach biological science in grades 7-8.

Suggested Teaching Combinations for First-Class High School Certification

1. Physical education and biological science.
2. Physical education and mathematics.
3. Physical education and social studies.
4. Physical education and English.
5. Physical education and physical and general science.
6. Physical education and physical science.
7. Physical education and biological and general science.
8. Physical education and industrial arts.
9. Other combinations approved by the adviser.

GRADUATE WORK

The School of Physical and Health Education, Recreation, and Safety offers courses leading to the Master of Science Degree, with an emphasis in Health and Safety Education, Physical Education, or Recreation—or combinations of all three areas. (See Graduate School *Announcements*).

The Degree of Doctor of Education is offered in cooperation with the College of Education. The sequence of prerequisites to admission, prerequisites to candidacy, and requirements for the degree are in the 1965-66 Graduate School *Announcements.*

CURRICULUM FOR PHYSICAL EDUCATION MAJORS

Degree: Bachelor of Science in Physical Education

The curriculum for majors is organized to provide professional preparation for men and women who are desirous of becoming teachers of health and physical education in elementary schools, high schools, and colleges. The courses are arranged to meet the University requirements for the degree of Bachelor of Science in Physical Education, as well as the State requirements for teacher education in secondary and elementary schools.

SECONDARY

Women

FIRST YEAR				SECOND YEAR			
First Sem.	*Hr.*	*Second Sem.*	*Hr.*	*First Sem.*	*Hr.*	*Second Sem.*	*Hr.*
English 1	3	English 2	3	Educ. 105	3	Educ. 106	3
Biol. 1	4	Biol. 2	4	Educ. 100	1	Soc. Sci. 2	4
Hist. 1	3	Hist. 2	3	Soc. Sci. 1	4	P.E. 54	2
P.E. 5	1	P.E. 32	1	English 5 or 6	3	P.E. 66	1
P.E. 31	1	P.E. 33	1	Music 10	3	English 18	3
P.E. 35	1	P.E. 36	2	P.E. 61	1	Elect.	3
P.E. 71	2	Health Ed. 2	2	P.E. 63	1		
Art 30	3			Rec. 4	3		
	18		16		19		16

THIRD YEAR				FOURTH YEAR			
First Sem.	*Hr.*	*Second Sem.*	*Hr.*	*First Sem.*	*Hr.*	*Second Sem.*	*Hr.*
Safety Ed. 127	2	Zool. 271	4	P.E. 191	2	P.E. 278	3
Safety Ed. 181	2	P.E. 131	1	*Educ. 120	4	*Educ. 120	4
Health Ed. 102	2	P.E. 132	1	*Educ. 124	6	*Educ. 124	6
P.E. 130	1	P.E. 176	2	*Educ. 152	2	*Educ. 152	2
P.E. 175	5	P.E. 177	3	Elect.	3	Elect.	2
Elect.	3-4	P.E. 180	2				
		Elect.	4				
	16		17		17		17

*Required of all students desiring certification for teaching.

Men

FIRST YEAR				SECOND YEAR			
First Sem.	*Hr.*	*Second Sem.*	*Hr.*	*First Sem.*	*Hr.*	*Second Sem.*	*Hr.*
English 1	3	English 2	3	English 5 or 6	3	English 18	3
Biol. 1	4	Biol. 2	4	Soc. Sci. 1	4	Soc. Sci. 2	4
Hist. 1	3	Hist. 2	3	P.E. 55	2	P.E. 54	2
Mil. or Air Sci. 1	2	Mil. or Air Sci. 2	2	Rec. 4	3	P.E. 56	2
P.E. 5	1	Health Ed. 2	2	Mil. or Air Sci. 3	2	Mil. or Air Sci. 4	2
P.E. 51	2	P.E. 52	1	Music 10	3	Art 30	3
P.E. 71	2	P.E. 53	2	Elect.	3	Elect.	3
	17		17		20		19

THIRD YEAR				FOURTH YEAR			
First Sem.	*Hr.*	*Second Sem.*	*Hr.*	*First Sem.*	*Hr.*	*Second Sem.*	*Hr.*
Educ. 100	1	Educ. 106	3	P.E. 191	2	P.E. 278	3
Educ. 105	3	Zool. 271	4	*Educ. 120) or	4	*Educ. 120) or	4
Health Ed. 102	2	P.E. 131	1	*Educ. 124)		*Educ. 124)	
P.E. 121	2	P.E. 132	1	elect.	6	elect.	6
P.E. 130	1	P.E. 176	2	*Educ. 152)	2	*Educ. 152)	2
P.E. 175	5	P.E. 177	3	Elect.	3	Elect.	2
Safety Ed. 181	2	P.E. 180	2				
Eafety Ed. 127	2	Elect.	3				
	18		19		17		17

*Required for those students desiring certification for teaching. May be taken the first or second semester of senior year.

ELEMENTARY

Women

FIRST YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
English 1	3	English 2	3
Biol. 1	4	Biol. 2	4
Hist. 1	3	Hist. 2	3
P.E. 5	1	Health Ed. 2	2
P.E. 31	1	Math. 6	3
P.E. 35	1	P.E. 32	1
P.E. 71	2	P.E. 33	1
Art 1	2		
	17		17

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Educ. 105	3	Educ. 106	3
Soc. Sci. 1	4	Soc. Sci. 2	4
English 5 or 6	3	English 18	3
Hist. 52	3	Hist. 53	3
Music 10	3	Art 2	2
P.E. 61	1	P.E. 54	2
		P.E. 66	1
	17		18

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Phys. Sci. 1	4	P.E. 131	1
Safety Ed. 127	2	P.E. 132	1
Health Ed. 101	2	P.E. 176	2
Music 11	2	P.E. 177	3
P.E. 63	1	P.E. 180	2
P.E. 130	1	Educ. 141	3
P.E. 175	5	Music 12	2
		Speech 3 or 11	3
	17		17

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
P.E. 191	2	P.E. 278	3
For. 140	3	Educ. 142	3
Safety Ed. 181	2	Educ. 143	2
Lib. Sci. 203	3	Educ. 144	2
Geol. 107	3	Educ. 145	2
Hist. 150	3	Educ. 146	6
Art 30	3		
	19		18

Men

FIRST YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
English 1	3	English 2	3
Biol. 1	4	Biol. 2	4
Hist. 1	3	Hist. 2	3
Mil. or Air Sci. 1	2	Mil. or Air Sci. 2	2
P.E. 5	1	Health Ed. 2	2
P.E. 51	2	P.E. 52	1
P.E. 71	2	P.E. 53	2
	17		17

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
English 5 or 6	3	English 18	3
Soc. Sci. 1	4	Soc. Sci. 2	4
Music 10	3	P.E. 54	2
P.E. 55	2	P.E. 56	2
Mil. or Air Sci. 3	2	Mil. or Air Sci. 4	2
Educ. 105	3	Educ. 106	3
Lib. Sci. 203	3	Math. 6	3
	20		19

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
P.E. 175	5	P.E. 132	1
Safety Ed. 127	2	P.E. 176	2
Music 11	2	P.E. 177	3
Art 1	2	P.E. 180	2
Hist. 52	3	Music 12	2
Hist. 150	3	Art 2	2
Art 30	3	Hist. 53	3
		Safety Ed. 181	2
	20		17

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Phys. Sci. 1	4	P.E. 278	3
Speech 11 or 3	3	Educ. 142	3
For. 140	3	Educ. 143	2
Geol. 107	3	Educ. 144	2
Health Ed. 101	2	Educ. 145	2
Educ. 141	3	Educ. 146	6
	18		18

CURRICULUM FOR RECREATION MAJORS

Degree: Bachelor of Science in Recreation

The major curriculum in recreation is planned primarily to prepare for professional recreation responsibilities in parks and recreation systems, public and private, industries, public housing, hospitals, and similar fields in a society which has become increasingly leisure oriented.

Of the hours required for the degree, courses are arranged in six groups:

Communications (12)
Core Curriculum (36)
Physical Education, Health Education, and Safety Education (W-16) (M-15)
Recreation (32)
Field Work (3)
Electives in allied disciplines (at least) (W-31) M-30

Electives are to be selected by advisement. Secure a list of recommended electives from the recreation department office. It is generally advisable for recreation majors to prepare themselves in at least two human interest recreation areas by electing courses in arts and crafts, dramatics, music, dance, nature recreation, and sports. Men electing advanced ROTC must add hours required to the above requirements.

During the summer between the junior and senior year, all majors are required to do at least eight weeks of supervised recreation leadership field work. The selected agency in which the student will do his work must be approved by chairman of the department. Arrangements will be made for supervision and visitation by the supervisor. The final report and evaluation by student must be completed by the end of the succeeding semester.

FIRST YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
English 1	3	English 2	3
Geol. 5	3	History (Elect.) (W)	3
Geol. 2 (Lab)	1	Mil. or Air Sci. 2 (M)	2
Health Ed. 2	2	Music 10 (W)	3
Mil. or Air Sci. 1 (M)	2	Psychol. 3 (M)	4
P.E. 5	1	Rec. 11	3
P.E. 50 or 33 (W)	1	Zool. 2	4
P.E. 50 or 52 (M)	1		
P.E. 35 (W)	1		
Rec. 1	3		
	W–15		W–16
	M–16		M–16

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
English 18	3	Bot. 2	4
Mil. or Air Sci. 3 (M)	2	Econ. 51 (W)	3
P.E. 31 (W)	1	Mil. or Air Sci. 4 (M)	2
P.E. 53 (M)	2	Music 10 (M)	3
P.E. 54	2	P.E. 66 (W)	1
Psychol. 3 (W)	4	P.E. 132 (M)	1
Rec. 5	2	Rec. 102	3
Rec. 11	3	Speech 11 (W)	3
Speech 11 (M)	3	Sociol. 1	3
	W–15		W–17
	M–17		M–16

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Art 30	3	Drama 177 (M)	2
Eng. Lit. (Elect.) (M)	3	Drama 178 (M)	1
Core A Elect.	3	Econ. 51 (M)	3
Hist. Elect. (M)	3	Eng. Lit. (Elect.) (W)	3
P.E. 130	1	For. 140	3
Rec. 107	3	P.E. 131	1
Safety Ed. 127	2	P.E. 132 (W)	1
Safety Ed. 181 (W)	2	Pol. Sci. 120	3
Elect. (W)	3	Rec. 104	3
		Elect. (W)	3
	W–17		W–17
	M–18		M–16

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Drama 177 (W)	2	Journ. 212	3
Drama 178 (W)	1	Psychol. 115	3
For. 142 (M)	2	Rec. 202	3
Rec. 145	3	Rec. 271	3
Rec. 282	3	Elect. (M)	3
Safety Ed. 181 (M)	2	Elect. (W)	6
Sociol. 200 Level	3		
Elect.	3		
	W–15		W–18
	M–16		M–15

Recreation Minor

Those students majoring in other fields may elect to work for a minor in recreation which will prepare them for leadership responsibility in various types of recreation services, such as private agencies, summer programs in communities, school board-sponsored public recreation systems, and park program responsibilities. The following courses, or their equivalents, are recommended:

Course Number and Title	*Hr.*
Rec. 5, Arts and Crafts in Recreation	2
Rec. 11, Nature Recreation and Camping	3
Rec. 102, Program Planning	3
Rec. 104, Functional Facilities Planning	3
Rec. 107, Recreation Leadership	3
Rec. 202, Philosophy of Recreation	3
Rec. 282, Recreation Administration	3
Phys. Ed. 54, Individual and Dual Sports	2

CURRICULUM FOR PRE-PHYSICAL THERAPY STUDENTS

Degree: Bachelor of Science in Physical Education

The following curriculum for pre-physical therapy students is organized to meet the University requirements for the degree of Bachelor of Science in Physical Education as well as satisfying the entrance requirements to physical therapy schools approved by the Council on Medical Education and Hospitals of the American Medical Association.

FIRST YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
English 1	3	English 2	3
Biol. 1	4	Biol. 2	4
Hist. 1	3	Hist. 2	3
P.E. 5	1	Health Ed. 2	2
P.E. 71	2	Rec. 4	3
P.E. 3 (W)	1	P.E. 32 (W)	1
P.E. 31 (W)	1	P.E. 33 (W)	1
P.E. 35 (W)	1	P.E. 36 (W)	1
P.E. 53 (M)	2	P.E. 51 (M)	2
Mil. or Air Sci. 1 (M)	2	Mil. or Air Sci. 2 (M)	2
Women	16	Women	18
Men	17	Men	19

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Soc. Sci. 1	4	Soc. Sci. 2	4
Physics 1	4	Physics 2	4
English 6	3	English 18	3
P.E. 61 (W)	1	Health Ed. 101 *or* 102	2
P.E. 63 (W)	1	P.E. 54	2
Music 10 (W)	3	P.E. 66 (W)	1
P.E. 52 (M)	1	P.E. 56 (M)	2
P.E. 55 (M)	2	Mil. or Air Sci. 4 (M)	2
Mil. or Air Sci. 3 (M)	2		
Women	16	Women	16
Men	19	Men	19

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Psychol. 3	4	Psychol. 4	4
Art 30	3	P.E. 132	1
Safety Ed. 181	2	P.E. 176	2
P.E. 175	5	P.E. 177	3
Safety Ed. 127	2	P.E. 180	2
Music 10 (M)	3	Zool. 271	4
Women	16	Women	16
Men	16	Men	16

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Chem. 1	4	Chem. 2	4
Speech 11	3	Psychol. 229	3
P.E. 130	1	P.E. 131	1
P.E. 191	2	P.E. 278	3
P.E. 121 (M)	2	Elect.*	3-6
Elect.* (W)	4-6		
Elect.* (M)	2-3		
Women	14-16	Women	14-17
Men	14-17	Men	14-17

*Electives should be chosen in accordance with admission requirements of the physical therapy school in which the student expects to enroll. Suggested electives are: Educ. 105, 106; Foreign Language (French, German, Italian, Russian, Spanish 1 and 2); Math. 2, 3, 4; Psychol. 110, 116, 122, 125, 218, 222, 236; Sociol. 210, 211, 234, 235, 243; Speech 3, 75, 256; Zool. 231, 232, 233, 235, 236, 237.

Entrance requirements to the various schools of physical therapy vary. The majority of physical therapy schools approved by the American Medical Association accept students if: (1) they have graduated from an approved school of physical education; (2) they have graduated from an approved school of nursing; or (3) they have completed two or three years of college work. Preference is given those students who have specified credits in physics, chemistry, biology, and psychology.

CORRECTIVE THERAPY[1]

West Virginia University, through an affiliation with the Veterans Administration, prepares men and women as corrective therapists for possible employment under civil service regulations in Veterans Administration hospitals throughout the United States.[2]

Students pursuing certification requirements for a Bachelor of Science Degree in Physical Education can obtain preparation as corrective therapists by completing 240 clock hours of clinical laboratory experience in a general, medical, surgical, and/or psychiatric hospital. The laboratory experience is met by completing Physical Education 278, Residency in Corrective Therapy, a six weeks' course offered during the summer at a Veterans Hospital under the auspices of the professional staff. Room and board is provided by the supervising hospital.

Students interested in meeting the requirements for employment in the Veterans Administration as corrective therapists should indicate such an interest prior to completing their junior year. Subsequent to completing the course, those interested trainees will file application for Federal employment with the Board of Civil Service Examiners, Veterans Administration Central Office, Washington, D. C.

Courses of Instruction

HEALTH EDUCATION

2. Personal and Community Health. I, II. 2 hr. Phases of healthful living which should be understood by all college students. Special emphasis on aspects of personal health.

101. The Elementary School Health Program. I, II, S. 2 hr. PR: Educ. 105. Study and analysis of the health program which takes place in the school or through the efforts of school personnel: the organization, educational aspects, and personnel relationships involved in school health services, healthful school living, and health education. Required for teacher certification.

102. The Secondary School Health Program. I, II, S. 2 hr. PR: Educ. 105. Study and analysis of the health program which takes place in the school or through the efforts of school personnel: the organization, educational aspects, and personnel relationships involved in school health services, healthful school living, and health education. Required for teacher certification.

201. Advanced School Health. I, S. 3 hr. PR: Health Ed. 101, 20 hr. of Education, or consent. An analysis of problems in school health services, healthful school living, the nature of health education, and the scope of health instruction which confronts teachers and administrators.

205. Philosophy of Health Education. I, S. 3 hr. PR: Health Ed. 2, and 101, or equiv. Analysis of the scientific bases, purposes, procedures, and content, with implications for school and public health education programs.

[1]Corrective therapy is the application of the principles, techniques, and psychology of medically oriented physical education to assist the physician in the accomplishment of prescribed objectives. It is administered under the direct supervision of a physician who determines the goals and limits of the therapist's work and specifies these by prescription.

[2]Present affiliation is with the Veterans Administration Hospital, Leech Farm Road, Pittsburgh 6, Pa.

PHYSICAL EDUCATION

Professional Curriculum

31. Team Sports. I. 1 hr. (W). Fundamentals, skills, and practice in playing soccer and basketball.

32. Team Sports. II. 1 hr. PR: Phys. Ed. 31. (W). Techniques and practice in teaching and officiating basketball. Fundamentals, skills, and practice in softball.

33. Swimming and Diving. I. 1 hr. PR: Phys. Ed. 14 or equiv. (W).

34. Tennis and Archery. I. 1 hr. (W).

35. Modern Dance Technique. I. 1 hr. (W).

36. Movement and Its Rhythmic Structure. II. 2 hr. (W). PR: Phys. Ed. 35. Understanding the nature and scope of rhythm in physical education programs.

37. Advanced Modern Dance. I, II. 1 hr. PR: Phys. Ed. 35 (W). Continuation of Phys. Ed. 35, including methods of teaching.

38. Dance Composition. II. 2 hr. PR: Phys. Ed. 35, 36 (W). Problems in force, time, and space as elements of expressive movement.

*43. Physical Education for Elementary Teachers. I, S. 2 hr. PR: Phys. Ed. 1 and 2 or 41 and 42, or consent. Philosophy, objectives, identification of physical education, and a broad selection of activities adapted to the primary and intermediate levels. Laboratory work and observation in the elementary schools are required.

50. Beginning and Intermediate Swimming. I, II. 1 hr. (M). Instruction in the basic swimming strokes and beginning diving. All physical education and recreation majors who do not pass the swimming skill tests must register for this course.

51. Fundamentals of Tumbling and Gymnastics. I. 2 hr. (M).

52. Advanced Swimming, Lifesaving, and Water Safety. I, II. 1 hr. (M) PR: Phys. Ed. 50 or equiv. Theory and practice in aquatics and water safety, including American Red Cross Senior Lifesaving Certificate.

53. Junior and Senior High School Activities and Games. I. 2 hr. (M). Theory and fundamentals of speedball, soccer, volleyball, archery, and graded games of low organization and lead-up games for grades 1-12.

54. Individual and Dual Sports. II, S. 2 hr. Theory and practice in fundamentals of badminton, bowling, golf, handball, and tennis.

55. Fundamentals of Baseball, Basketball, and Wrestling. I. 2 hr. (M).

56. Fundamentals of Track and Football and Theory of Coaching. II. 2 hr. (M).

57. Advanced Gymnastics. II. 2 hr. PR: Phys. Ed. 51 (M); Phys. Ed. 61 (W). A study of advanced skills, techniques, and teaching methods in tumbling, regular and special apparatus work and related areas of gymnastics instruction.

61. Stunts, Tumbling, and Trampoline. II. 1 hr. (W).

63. Hockey and Volleyball. I. 1 hr. (W). Fundamentals, skills, and practice.

*This course is required for certification for Elementary School teaching certificates.

66. Graded Games and Lead-up Games. II. 1 hr. Games for all ages which may be used in home, school, playground, and gymnasium, and lead-up games in various sports.

68. Officiating Athletics. II. 1 hr. (W). Rules, techniques, and laboratory work.

71. Orientation in Physical Education. I. 2 hr. Purposes, scope, and possibilities in health education, physical education, recreation, and coaching in the school program.

121. Athletic Training. I. 2 hr. (M). Lectures, demonstrations, and practice work in training and first aid in athletics.

124. Instructorship in Swimming, Lifesaving, and Water Safety. II. 1 hr. PR: Phys. Ed. 52 or equiv. Teaching methods in swimming and water safety. Meets American Red Cross Certification Standards and course completion carries eligibility for teaching swimming, lifesaving, and water safety. Open only to students who have valid lifesaving cards.

130. Program Assisting. I. 1 hr.

131. Program Assisting. II. 1 hr.

132. Folk Dancing. II. 1 hr. Fundamentals and materials of folk dancing.

171. Basic Rhythms and Dance Accompaniment. II. 2 hr. PR: One semester of modern dance. Understanding of the basic principles of rhythm as they relate to body movement. (Ability to play the piano is not required.)

175. Anatomy and Kinesiology. I, II. 5 hr. PR: Biol. 1 and 2. Principles of mechanics of body movement in relation to anatomical structure.

176. The Adapted Program in Physical Education. II. 2 hr. PR: Phys. Ed. 175. A basic course dealing with deviations from the normal and the organizing and adapting of physical education programs to meet the needs of atypical students or those with special problems.

177. History and Principles of Physical Education. II. 3 hr. Development of physical education from early civilization to present time. Basic principles underlying modern programs.

180. The Physical Education Program in the Elementary School. II. 2 hr. Theory, methods, techniques, and practice of activities in physical education for elementary school children.

191. Introduction to Tests in Health and Physical Education. I. 2 hr. A background course in physical achievement tests. History of development; review of outstanding tests. Essential procedures used in evaluating tests and their results, including statistical analysis.

206. Program in Individual Sports. S. 3 hr. PR: Phys. Ed. 51, 55, 56, 155 or equiv. Designed for coaches of interscholastic athletics. A study of advanced coaching techniques and methods in track and field activities, wrestling, and gymnastics.

207. Program in Team Sports. S. 3 hr. PR: Phys. Ed. 51, 55, 56, 155, or equiv. Designed for coaches of intercollegiate athletics. A study of advanced techniques, systems of play, offense, defense, methodology, staff organization, and related problems in the coaching of football, basketball, and baseball.

208. Advanced Athletic Training and Conditioning. I, S. 3 hr. PR: Phys. Ed. 121, 175; Zool. 171, or equiv. To acquaint graduate students with recent theories, practices, and techniques in the prevention, care, and treatment of athletic injuries.

209. Officiating Football and Basketball. I, S. 2 hr. Rules and techniques of officiating, officials' organizations, and laboratory work.

210. Program in Sports. S. 3 hr. (W). PR: Phys. Ed. 31, 32, or equiv. Designed especially for women engaged in teaching and coaching. Organization and administration of individual, dual, and team sports. Practicum in girls' and women's sports.

211. Organization and Administration of Intramural Sports. I, S. 3 hr. PR: 4 hr. of physical education activity courses. Critical analysis with view to justification from standpoint of objectives and of contribution to general welfare of students participating. Organization and administration of programs on secondary and college levels.

212. Extracurricular Physical Education Activities for Secondary School Girls. I, S. 3 hr. PR: Consent. Critical analysis of physical education extracurricular activities from the standpoint of objectives and contributions to the general welfare of the participants; value of the activities in the school and community; relationship to the physical education program; problems associated with the organization and administration of the program.

213. Administration of Athletics. S. 3 hr. PR: Experience in coaching and administration. The course is designed for persons engaged in actual coaching and administration. A study of the problems associated with the organization and administration of interscholastic and intercollegiate athletic programs and their relationship to physical education.

215. Rhythms and Dance. II, S. 3 hr. PR: Consent. Principles of movement, materials, and practicum in dance.

219. Modern Dance Techniques and Composition. I, S. 3 hr. PR: Phys. Ed. 35 and 36 or consent. Application of scientific principles of movement; basic principles of music as related to dance movement; choreographic principles; practicum in dance movement. Principles for teaching the dance and problems involved in planning programs.

275. Principles and Practices of Adapted Physical Education. I, S. 3 hr. PR: Zool. 171, Phys. Ed. 175, or equiv. Principles and philosophy in building an adapted program, types of injuries, classification of students, and application of adapted exercises.

278. Administration of Physical Education. II, S. 3 hr. PR: Phys. Ed. 71, 177. Modern theories in physical education and guiding principles in organization and administration of the program.

292. Physical Education in the Elementary School. I, S. 3 hr. PR: Teaching experience or consent. Philosophy, objectives, activities, equipment, utilization of space, program planning, and evaluation for a functional program in elementary school physical education.

294. Philosophy of Physical Education. I, II, S. 3 hr. PR: Phys. Ed. 177 and 278 or equiv. and consent. Study of the place of physical education in education and modern living; philosophic processes in physical education; critical analysis of various problems confronting the physical educator.

295. Residence in Corrective Therapy. S. 6 hr. PR: Phys. Ed. 175, 176, and selected psychology courses. An intensive 6-week course offered during the Summer under the auspices of the professional staff of a hospital. The course consists of 240 clock hours of staff lectures and practical clinical experience in corrective therapy as it is integrated in the Physical Medicine and Rehabilitation Program of a hospital.

RECREATION

1. Introduction to Recreation. II. 3 hr. A framework into which the other recreation courses with all their implications will fit. History, trends, concepts, relationship to other fields; surveys of national organizations, leaders, and literature. This course is basic to all other recreation courses.

4. Recreation and the School. I. 3 hr. Study of basic concepts of play, recreation, leisure, and their relationship to personal and community life. Human interest areas of approach to organized programs in school recreation.

5. Introduction to Arts and Crafts in Recreation. I. 2 hr. Workshop course. Place of arts and crafts in recreation, their organization, and integration with other phases of recreation.

11. Nature Recreation and Camping. II. 3 hr. Lecture and workshop. Introduction to organized camping movement including purposes, camp sites, equipment, programs and leadership. Exploration of nature recreation and its relationship to community recreation and camping programs.

12. Social Recreation. I. 3 hr. Lecture and workshop course. Place of social recreation activities, informal dramatics and music in community center, playground, camp and school extracurricular programs.

102. Program Planning. II. 3 hr. PR: Rec. 1. Fundamentals for general program planning; considering needs, facilities, age groups, local customs, climatic factors, etc. Planning involved in playgrounds, indoor centers, playfields, parks, hospitals, voluntary agencies, industry, and camps.

104. Functional Planning of Recreation Facilities. II. 3 hr. Lecture and workshop. Problems and principles governing the planning for functional and effective usage of facilities in recreation. Emphasis on playgrounds, playfields, indoor centers, parks, camps, and swimming pools.

107. Recreation Leadership and Group Work. I. 3 hr. Meaning of leadership, its application to the field of recreation, and analysis of techniques. Examination of social group work method and its application particularly in national youth organizations.

145. Field Work. 3 hr. Recreation majors are required to have at least 8 weeks of supervised recreation leadership field work, usually during summer following junior year. Arrangements under the direction of adviser.

202. Philosophy of Recreation. II, S. 3 hr. PR: Consent. Interpretation of recreation as a basic part of the living process; importance to individual community, and national welfare; social and economic significance.

204. Recreation Hobbies. I, S. 2 hr. PR: Rec. 1 or equiv. Lecture and workshop. Value of hobbies to youth and adults; participation in various types of hobbies; methods of organization and presentation; nature and scope.

206. Social Recreation for School-Age Groups. II, S. 3 hr. PR: 12 hr. in Education or consent. Workshop course. Planning and conduct of social activities, parties, picnics, special events and other recreation experience adapted to home, church, school, and community.

265. Leisure and Recreation. I, S. 3 hr. PR: Consent. Study of leisure as a social phenomenon in our modern culture and its implications for recreation.

271. Administration of Camps and Preparation of Camp Counselors. II, S. 3 hr. PR: Rec. 11 or equiv. or consent. Principles involved in modern camping programs; organization and administration of camps.

282. Administration of Recreation. I, S. 3 hr. PR: Major in recreation, or consent. General principles of administration; organization of staff administrative procedures. Study of enabling laws, legal responsibilities, surveys, finance, programs, facilities, and public relations.

290. Outdoor Education and School Camping. 3 hr. PR: For majors in education, recreation, extension, and forestry, or consent. Course designed to meet the needs of schools, colleges, and other education and conservation agencies interested in developing outdoor education programs. Emphasis is upon interpretation and programming of the outdoor education concept.

293. Outdoor Recreation in Our Modern Society. 3 hr. PR: For persons in fields of recreation, park, outdoor education and conservation, or consent. Interpretation as to what it is, what people do, where they go, how this affects our economic, social, and cultural life, and significant trends.

296. American Folk Dance. I, S. 3 hr. PR: Phys. Ed. 132 or equiv. Study of American Square, contra, circle, and round dances and play party games, and their place in community and school recreation programs. Their origin and relationship to the arts and other aspects of American culture. Analysis of techniques in leading and calling.

SAFETY EDUCATION

127. Accident Prevention and First Aid. I, S. 2 hr. Standard and advanced first aid as outlined by the American Red Cross.

181. Principles of Safety Education. I. 2 hr. Introductory course. Basic principles of safety education and accident prevention. Deals with the development of the safety movement and its place in education.

182. Techniques and Procedures in Driver and Traffic Safety Education. II, S. 3 hr. PR: Safety Ed. 181 or equiv., or 6 hr. of Education and valid driver's license. A basic course designed to prepare teachers of driver education; includes supervised practice-driving-instruction (laboratory arranged).

280. Programs in Safety Education. I, II, S. 3 hr. PR: Consent. Planning programs, methods and materials for offering instructional programs in safe living in school, home, travel, industry, physical education, athletics, and recreation.

281. Driver and Traffic Safety Education Programs. II, S. 3 hr. PR: Safety Ed. 280 or equiv., or 20 hr. of Education. Philosophy, objectives, new and advanced equipment, methods and materials in driver and traffic safety education; program planning, and evaluative techniques in schools and adult programs. Includes laboratory with various methods, materials, and instructional techniques.

282. Problems in Driver and Traffic Safety Education. I, II, S. 3 hr. PR: Safety Ed. 281 or equiv. or teaching experience in driver education. Advanced course. Individual problems encountered in teaching driver and traffic safety education. Examination of existing courses of study, research and supervisory and evaluative practices.

283. Philosophy of Safety Education. I, II, S. 3 hr. PR: Safety Ed. 280, 281, or 20 hr. of Education. Study of the place of safety education in modern living; philosophies of safety education as expounded by leaders in the field; emphasis on accident causation and accident prevention in various areas of safety; and research implications.

YEAR 1965

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